EORSI, M.; JABLONSZKY, L.; MILCH, H.

"Importance of Phage in Enteric Infections in Infants." p. 220, (NEPEGESZSEGUGY, Vol. 34, no. 8, Aug. 1953, Budapest, Hungary)

SO: Monthly List of East European Accessions, LC, Vol. 3, No. 5, May 1954/Unclassified

KORSI, M.; JABLONSZKY, L.; MILCH, H.

Significance of bacteriphage in infantile enteral infections.
I. Enteritis due to E. coli O 111 and O 55. Acta microb. hung.
1 no.1-3:1-8 1954.

1. State Institute for Public Health and Department of Pediatrics of the Municipal Istvan Hospital, Budapest; received July 2,1953.
(ESCHERICHIA COLI, infect.
enteritis in inf., O 111 & O 55 strains)
(ENTERITIS, bacteriol.
E. coli in inf., O 111 & O 55 strains)

EÖRSI, M.

EXCERPTA MEDICA Sec.4 Vol.10/2 Microbiology Feb 57

290. EÖRSI M. State Inst. of Hyg., Budapest. *Phage types of S. typhi strains isolated in Hungary and relevant investigations made from 1950 to 1954 ACTA MICROBIOL. ACAD. SCIENT. HUNG. (Budapest) 1956, 3/3 (285-298) Tables 4

The distribution of the phage types of S. typhi in Hungary is similar to that in the other European countries. On the basis of typing 6,404 strains, the occurrence of the following phage types was proved: A, B1, B2, B3, C, D1, D2, D4, D5, D6, E1, E2, F1, F2, J, N, T, and X. Some strains proved to be sensitive to D1 + D2, D1 + D2 + D4 + D5 + D6 + N, as also some to D1 + D2 + D4 + D5 + D6 + N + L2 phages. 9.1% of the strains were untypable, and 8.2% degraded. In some cases the phage type of the same carrier's strain changed with the passing years. Farkas - Budapest

MORSI, M.; JABLONSZKY, L.; MILCH, H.; BARSY, G.

No translation. Acta microb. hung. 4 no.2:201-215 1957.

1. State Institute of Hygiene and St. Stephen's Hospital, Budapest.
(ENTERITIS, in inf. & child
etiol. role of bacteriophages, feces exam. in an epidemic)
(BACTERIOPHAGE
etiol. role in inf. enteritis, feces exam. in an epidemic)

1757. SEVERAL LYSOTYPES INVOLVED IN A TYPHOID FEVER EPIDEMIC - Mehrere Lysotypen in einer Epidemie von Typhus abdominalis - Eörsi M. Staatl. Hyg. Inst. Budapest - ZBL. BAKT., I. ABT. ORIG. 1957, 168/1-6 (509-511) Tables 1

In a Hungarian provincial town in which typhoid fever had been sporadic during the past few years, but in which 19 registered carriers lived, the water mains were damaged in the course of a violent downpour. Shortly afterwards 42 subjects were affected by typhoid fever. The lysotype of the S. typhi isolated suggested that carriers living in the vicinity of the damaged water mains should be regarded as the source of infection. Rische - Wernigerode (IV, 17)

MILCH, Hedda; EORSI, Maria; BOGARDI, M.

The incidence of staphylococci in hospital personnel and patients, as studied by phage-typing. Acta microb.hung. 7 no.3:285-296 '60.

1. State Institute of Hygiene, Budapest, and Paul Heim Children's Hospital, Budapest.
(STAPHYLOCOCCAL INFECTIONS transm)
(BACTERIOPHAGE)
(HOSPITALS)

EOTTEVENYI, T.

"Electric Installations for Distance Signal Fluviometers", p. 410 (HELYEPITESTUDOMANYI SZEMLE, Vol. 3, no. 8/9, Aug./Sept. 1953, Budapest, Hungary).

Source: Monthly List of East European Accessions, LC, Vol. 3, no. 5, May 1954/Uncl.

EOTVOS, KAROLY

Utazas a Balaton korul. (Budapest) Szepirodalmi Konyvkiado, 1957, 780 p. (Journey around Lake Balaton)

SO: Monthly Index of East European Acessions (EEAI) Vol.6, No. 11 November 1957

YEPEL'BAUM, G.Ye.

1. MIKHAILIK, A. F.: FARBER, S. G.: YEPEL'BAUM, G. Ye.

2. USSR (600)

4. Ceilings

7. Layer panels for ceilings. Biul. stroi. tekh. 9 no. 21, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

S/062/63/000/002/005/020
B144/B186

AUTHORS: Entelis, S. G., Tiger, R. P., Nevel'skiy, E. Ya., and Epel'baum, I. V.

TITLE: Kinetics and mechanism of the hydrolysis of carboxylic anhydrides. Communication 1. Dependence of the reaction rate on the polarity of the medium

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 2, 1963, 245 - 252

TEXT: The hydrolysis of phthalic (I) and terephthalic (II) chloro anhydride was studied spectrophotometrically at 35°C in dioxane containing 0.1 - 15.7 M/l of water. The concentration of the chloro anhydride was varied from $0.5 \cdot 10^{-5}$ to $1 \cdot 10^{-4}$ M/l. Owing excess H_2O, the reaction seems to be zero order: $w = -dc_X/dt = k_1 c_X$ (2), where k_1 is the velocity constant observed and c_X is the chloro anhydride concentration during the reaction. The first order of the reaction with respect to the chloro anhydride was established from the independence of k_1 from the initial concentration. If

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Kinetics and mechanism of the...

the reaction is also first order with respect to H_2O, eq. 2 becomes $w = -dc_X/dt = k_2 c_X c_{H_2O}$ and $k_1 = k_2 c_{H_2O}$. In II, k_2 proved almost independent of the H_2O concentration up to 0.8 M/l and then increased with increasing c_{H_2O}. From the two possible explanations, i.e., second-order reaction with respect to water and H_2O effect on the dielectric constant, the first could be ruled out by plotting the curve for the rate of hydrolysis as a function of c_{H_2O} in dioxane. To verify the second possibility, the rate of hydrolysis was studied, keeping c_{H_2O} constant and varying the dielectric constant ϵ by additing acetonitrile; k_2 increased with increasing ϵ. When ϵ was kept constant, k_2 also remained constant, although c_{H_2O} increased by a factor of 3. These results for II prove that the dependence of k_2 on the H_2O content is only due to the c_{H_2O} effect on ϵ and that the reaction is

Card 2/3

second-order (first-order with respect to each reagent). With I, k_2 increased only in water-dioxane medium; in the ternary system, k_2 decreased with constant c_{H_2O} and increasing ε and rose slightly with constant δ and increasing c_{H_2O}. For II $\log k_2 = -4.33 + 2.19(\varepsilon - 1)/(2\varepsilon + 1)$, and for I $\log k_2 = -3.75 + 0.91(\varepsilon - 1)/(2\varepsilon + 1)$. The dipole momenta calculated from these data and the Kirkwood equation were $6.95 \cdot 10^{-18}$ CGSE units for II, and $6.85 \cdot 10^{-18}$ CGSE units for I. There are 5 figures and 4 tables.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: November 15, 1962

ENTELIS, S.G.; TIGER, R.P.; NEVEL'SKIY, E.Ya.; EPEL'BAUM, I.V.

Kinetics and hydrolysis mechanism of carboxyl dichlorides. Report No.1: Reaction rate as dependent on the polarity of the medium. Izv.AN SSSR.Otd.khim.nauk no.2:245-252 F '63. (MIRA 16:4)

1. Institut khimicheskoy fiziki AN SSSR.
(Chemical reaction, Rate of) (Anhydrides)
(Hydrolysis) (Dipole moments)

ENTELIS, S.G.; TIGER, R.P.; NEVEL'SKIY, E.Ya.; EPEL'BAUM, I.V.

Kinetics and mechanism of the hydrolysis of carboxylic acid dichlorides. Report No.2: Temperature dependence of the reaction rate, and the relation of activation energy and entropy to the polarity of the medium. Izv.AN SSSR.Otd.khim. nauk no.3:429-436 Mr '63. (MIRA 16:4)
(Phthaloyl chloride) (Therephthaloyl chloride)
(Hydrolysis)

TIGER, R.P.; NEVEL'SKIY, E. Ya.; EPEL'BAUM, I.V.; ENTELIS, S.G.

Kinetics and mechanism of hydrolysis of diacyl dichlorides. Report No.3: Hydrolysis of acyl chlorides in the presence of acids and alkali. Izv. AN SSSR Ser. khim. no.11:1969-1974 N '64 (MIRA 18:1)

1. Institut khimicheskoy fiziki AN SSSR.

MAKLETSOVA, N.V.; EPEL'BAUM, I.V.; ROZENBERG, B.A.; LYUDVIG, Ye.B.

Determination of molecular weight and molecular weight distribution of polytetramethylene oxide. Vysokom.soed. 7 no.1:70-73 Ja '65. (MIRA 18:5)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

EPEL'BAUM, Kh. I., GUTSALYUK, V. G., RAFIKOV, S. R.

"Viscosity of Paraffin-Base Petroleum at Low Temperatures," Izv. AN Kazakh. SSR, ser. khim., No 7, 1953, pp 111-117

Investigated the effect of cooling rate on dynamic viscosity for two samples of paraffin-base petroleums differing in paraffin content. Established that presence of paraffin affects structural viscosity of the petroleum. Rapid cooling of a paraffin-base petroleum produces many small crystals resulting in a large total surface which is bonded to the liquid phase, thus increasing the total volume of the solid phase, which brings about an increase in viscosity. Slow cooling produces large crystals with a smaller total surface and hence brings about a lower viscosity. (RZhKhim, No 19, 1954)

SO: Sum. No 568, 6 Jul 55

EPEL'BAUM, Kh.I.; GURSALYUK, V.G.; RAFIKOV, S.R.

Influence of the residues of thermal cracking on the viscous properties of lubricating oils. Izv.AN Kazakh.SSR.Ser.khim. no.1:95-106 '59. (MIRA 13:6)

(Lubrication and lubricants)

EPEL'BAUM, Kh.I.; GUTSALYUK, V.G.; RAFIKOV, S.R.

Effect of cracked stocks of the thermal cracking process on the rheological properties of paraffin oils at lower temperatures. Izv.AN Kazakh. SSR. Ser.tekh.i khim.nauk no.1:28-35 '63. (MIRA 17:3)

GUTSALYUK, V.G.; EPEL'BAUM, Kh.I.; RAFIKOV, S.R.

Depression properties of tarry residues from petroleum refining.
Izv. AN Kazakh. SSR. Ser. tekh. i khim. nauk no.2:26-33 '63.
(MIRA 17:2)

EPELBAUM, M. B.

USSR/Chemical Technology - Chemical Products and Their Application. Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62271

Author: Kitaygorodskiy, I. I., Keshishyan, T. N., Epelbaum, M. B.

Institution: None

Title: Effect of Heat Treatment of Mechanical Strength of Glass Fibers

Original Periodical: Tr. Mosk. khim.-tekhnol. in-ta, 1956, No 21, 67-73

Abstract: Different authors have found that strength of glass fibers (GF) decreases steadily with increasing temperature of their treatment. In this paper a study is presented of the effects of heat treatment [illegible] from GF of alkali-free and alkaline com-

USSR/Chemical Technology - Chemical Products and Their Application. Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62271

Abstract: strength of GF occurs, essentially, during a short initial period of the treatment and decrease in strength is accelerated with increase in temperature. With increasing temperature of treatment strength of threads and tapes made from GF drops steadily tending asymptotically to a certain value. On increase in the duration of treatment, at a constant temperature, strength of GF decreases steadily, also tending asymptotically to a certain value. After treatment for 3-5 minutes at 700°, GF have the same tensile strength as glass in bulk. Considerations are presented to the effect that lowering of mechanical strength of GF, on heat treatment, is due to processes taking place during low-temperature crystallization of the glass and also due to increased crystallization capacity of the glass after the heat treatment.

Card 2/2

EPEL'BAUM, M.B.

Installation of protective beats in furnace cooling zones. Stek. i ker. 14 no.3:26-27 Mr '57. (MLRA 10:4)
(Glass furnaces)

AUTHORS: Keshishyan, T. N., Epel'baum, M. B. 384/ 72-58-7-4/19

TITLE: The Structure of Glass and Its Mechanical Strength (Struktura stekla i yego mekhanicheskaya prochnost')

PERIODICAL: Steklo i keramika, 1958, Nr 7, pp. 12-17 (USSR)

ABSTRACT: According to P. P. Kobeko (Ref 1) the theoretical tensile strength of silicate glass should amount to approximately 800 to 900 kilo/mm^2, whereas it practically amounts to from 8 to 15 kilo/mm^2 in the case of massive glass and only in the case of glass fibers of a diameter of 3 to 5μ it amounts to 400 kilo/mm^2. This must be caused by the different heterogeneity of the samples which are connected with the crystallizability of the glass. This is confirmed by the work carried out by N. N. Valenkov, Ye. A. Poray-Koshits (Ref 2), O. K. Botvinkin (Ref 1), K. G. Kumanin (Ref 2), as well as L. I. Demkina (Ref 3). The authors further investigated the influence of the glass composition with respect to its mechanical strength in connection with this the diagrams are given in figures 1 and 2. Brittleness was selected amongst the mechanical properties because a method exists for its determination and since the glass samples do not require any additional heat treatment

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in this case. Moreover, the carrying out of these tests according to the method developed by Yu. A. Brodskiy (Ref 1) is described. The results obtained by the determination of the brittleness are given in figure 3. As results from this, the brittleness of glass is not in a linear relation to its composition. The properties of crystallization were investigated according to the method developed by T. N. Keshishyan (Ref 1). The dependence of the crystallizability of glass and its brittleness on its composition are given in figure 4. The dependence of the brittleness on the waiting time (determined by A. Di t el)) which was determined according to the method developed by Brodskiy, is graphically represented in figure 5. The existence of a certain relation between the brittleness and the crystallizability of the glass is confirmed in this way. The influence of the heat treatment on the mechanical strength of the glass fiber was investigated in the work carried out by I. I. Kitaygorodskiy, T. N. Keshishyan, M. B. Epel'baum (Ref 1). Conclusion: It was assumed that the mechanical properties of the types of glass depend in a certain way on the degree of microheterogeneity of the glass. It was tried to explain the influence of the chemical composition on the strength

The Structure of Glass and Its Mechanical Strength SOV/ 72-58-7-4/19

of the glass by the change of the strength of the chemical bonds and by the crystalline force. The results obtained by the experiments carried out confirmed this. There are 5 figures and 9 references, 8 of which are Soviet.

1. Glass--Structural analysis 2. Glass--Mechanical properties
3. Glass--Test results

Card 3/3

AUTHOR: Epel'baum, M. B. SOV/72-58-8-3/17

TITLE: Once More on the Usefulness of Boundary Boats in Glass Melting Furnaces (Yeshche raz o ratsional'noy ustanovke zagraditel'nykh lodok v steklovarennoy pechi)

PERIODICAL: Steklo i keramika, 1958, Nr 8, pp. 6 - 8 (USSR)

ABSTRACT: I.I.Tukh maintains that the place where the boundary boats are located in the furnace was of no importance (Refs 1 and 2); the author of the present paper says, however, that this is wrong. He mentions a formula put up by A.A.Sokolov for the calculation of the consumption of flowing glass (Ref 3) and which is proved by the papers of D.B.Ginzburg and I.Peyshes. The temperatures of the mass in the cooling part drop at all depths of the basin as they approach the machines. This was also shown by the results of the investigations of furnace Nr 2 of the Gusevskoy plant imeni Dzerzhinskiy (see figure). Then the author mentions the calculation of the viscosity as well as of the flow which he carried out on the basis of the data supplied by M.V.Okhotin (Ref 2). The glass temperature depends on the place of location of the

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boat in front of it, so does the quantity of the convection current; this fact exerts an influence on the heat balance of the cooling part. The dislocation of the floating boats to the end of the cooling part is useful also from the standpoint of glass-melting technology; this view is proved by the work carried out at the Magnitogorsk glass factory. By reducing the current and the temperature of the glass the erosion of the furnace basin and of the boundary boat is decreased and the elaboration temperature in the channel is stabilized. This way the working conditions of the machines are improved which increases the quality and output glass. From the standpoint of economy the improvement of the glass quality, a better utilization of the furnace, as well as an increase of the stability of the boats must be taken into account. The editorial staff of the periodical mentions that they will discontinue the discussion on this topic until material of special investigations will be at hand. They request of the Institute of Glass to publish in the periodical the results and conclusions of its investigations in this field. There are 1 figure and 5 references, which are Soviet.

One More on the Usefulness of Boundary Boats in Glass Melting Furnaces SOV/72-58-8-3/17

1. Glass--Melting 2. Furnaces--Performance 3. Furnaces--Equipment

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EPEL'BAUM, M.B.

Calculating the temperature and maximum speed of glass crystallization. Stek. i ker. 15 no.4:22-26 Ap '58. (MIRA 11:5)

1. Ural'skiy filial Akademii stroitel'stva i arkhitektury SSSR.
(Glass manufacture)

15 (2)

AUTHORS: Keshishyan, T. N., Epel'baum, M. B. SOV/72-59-8-4/17

TITLE: Micro-hardness of Glass as a Function of Its Micro-heterogeneity (Zavisimost' mikrotverdosti ot mikrogeterogennosti stekla)

PERIODICAL: Steklo i keramika, 1959, Nr 8 , pp 9-12 (USSR)

ABSTRACT: In the experiments by A. A. Bochvar and O. S. Zhadayeva, Ye. M. Savitskiy and M. A. Tylkina, A. M. Korol'kov and E. S. Kodaner (Footnote 1) the micro-hardness method of physico-chemical analysis is used. It can be seen from the work done by A. M. Korol'kov and E. S. Kodaner, V. M. Glazov, V. N. Vigdorovich, G. A. Korol'kov, that micro-hariness is immediately connected with the phase diagram of the system (Footnote 2). In a previous paper published by the authors of the present article it was suggested that the mechanical properties of glass are conditioned by the effect of the micro-heterogeneity, which is due to the crystallization properties of glass and its heat treatment, upon its strength (Footnote 3). Two series of glass types were examined: first glass types of different chemical composition with the same heat treatment, and second, glass types of the same chemical composition with

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a different heat treatment. In the investigation discussed here, 24 glass types with the same heat treatment in the system SiO_2-Al_2O_3-CaO-MgO-Na_2O were dealt with. Their micro-hardnesses and crystallization characteristics are shown in table 1. Their melting conditions and crystallization properties have already been discussed in the papers by T. N. Keshishyan, B. G. Varshal, Ye. A. Faynberg (Footnote 4). Yu. V. Rogozhin, Z. M. Syritskaya, B. V. Tarasov (Footnote 5) as well as N. M. Pavlushkin and G. G. Sentyurin (Footnote 6) used specially polished samples in the examination of the glass micro-hardness. The methods suggested by the authors consist in measuring the glass micro-hardness of fresh splinters with a grain size of 2-3 mm, whereby internal tensions in the glass are practically eliminated. A series of 24 glass samples was examined. The samples were melted and cooled under constant conditions. The second series examined was one of glass samples taken from different places of a tank furnace of the Magnitogorsk glass factory and cooled in water. The results obtained with the first series are shown in table 1, with the second

series in table 2. Figure 1 shows the micro-hardnesses of the different glass types as functions of the maximum rate of crystal growth. In connection with these examinations the work done by P. P. Kobeko (Footnote 6) is mentioned. Figure 2 shows the micro-hardness of glass from the Magnitogorsk factory as a function of the sampling temperature. It was proved by the investigations under consideration that a change of the degree of micro-heterogeneity of glass by different heat treatment results in a change in the mechanical properties of the glass. There are 2 figures, 2 tables, and 9 references, 7 of which are Soviet.

KESHISHYAN, T.N.; EPEL'BAUM, M.B.

Relation between the mechanical properties of glass and its crystallization. Trudy MKHTI no.27:150-155 '59. (MIRA 15:6)
(Glass--Analysis)

EPEL'BAUM, M. B., CAND TECH SCI, "CERTAIN PROBLEMS OF THE STRENGTH OF GLASS IN CONNECTION WITH ITS TENDENCY TO CRYSTALLIZE." [MOSCOW] 1960. (MIN OF HIGHER ED USSR, MOSCOW ORDER OF LENIN CHEMICO-TECHNOL INSTIM D. I. MENDELEYEV). (KL, 3-61, 223).

BRONSHTEYN, A.P.; ARKHANGEL'SKAYA, T.V.; TALISMAN, L.B.; GORBATYY, Yu.Ye.; EPEL'BAUM, M.B.

Physicochemical investigation of the thermal destruction process of some Kuznetsk Basin coals. Koks i khim. no.11:12-17 '62. (MIRA 15:12)

1. Chelyabinskiy metallurgicheskiy zavod (for Bronshteyn, Arkhangel'skaya). 2. Ural'skiy filial Akademii stroitel'stva i arkhitektury SSSR (for Talisman, Gorbatyy, Epel'baum).
(Kuznetsk Basin—Coal—Carbonization)

S/072/62/000/004/001/002
B105/B101

AUTHORS: Epel'baum, M. B., Gorbatyy, Yu. Ye.

TITLE: Internal stresses and change of mechanical properties in glass

PERIODICAL: Steklo i keramika, vol. 19, no. 4, 1962, 11 - 14

TEXT: The effect of a difference between the linear expansion coefficients of two phases was studied in glass containing spherulites. Gradually cooled glass of the Magnitogorskiy stekol'nyy zavod (Magnitogorsk Glass-works) contained spherulites of 8 - 10 mm diameter. Considerable internal stresses characterized by double refraction were detected around the spherulites. From the path difference of the beams measured with a Nikitin-Berek compensator the internal stress P was calculated by using the equation $P = \Delta/N\delta$, where $\Delta_{(m\mu)}$ is the path difference owing to double refraction, δ the thickness of the specimen in $m\mu$, and N the optical stress coefficient equated to $2.5 \cdot 10^{-7}$ kg/cm^2. It was found by means of a ПМТ-3 (PMT-3) unit that both microhardness and internal stress decrease as

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Internal stresses and change...

the distance from the spherulite increases. Since chemical analysis of the spherulite and the glass in its immediate neighborhood revealed no marked difference in composition, the internal stress can be explained by the difference between the thermal expansion coefficients of glass and spherulites. Removal of the spherulite from the glass by boring resulted in a decrease of the internal stress. There are 5 figures and 4 tables.

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EPEL'BAUM, M. B.; GORBATYY, Yu. Ye.

Method of preparation of samples for measuring the microhardness of glasses. Zav. lab. 28 no.12:1492-1494 '62. (MIRA 16:1)

1. Ural'skiy filial Akademii stroitel'stva i arkhitektury SSSR.

(Glass—Testing) (Hardness)

BRONSHTEYN, A.P.; MAKAROV, G.N.; GORBATYY, Yu.Ye.; EPEL'BAUM, M.B.

Shrinkage and formation of phase stresses in coke. Koks i khim. no.8:22-27 '63. (MIRA 16:9)

1. Chelyabinskiy metallurgicheskiy zavod (for Bronshteyn). 2. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva (for Makarov). 3. Ural'skiy filial Akademii stroitel'stva i arkhitektury (for Gorbatyy, Epel'baum).
(Coke)

EPEL'BAUM, M.L.

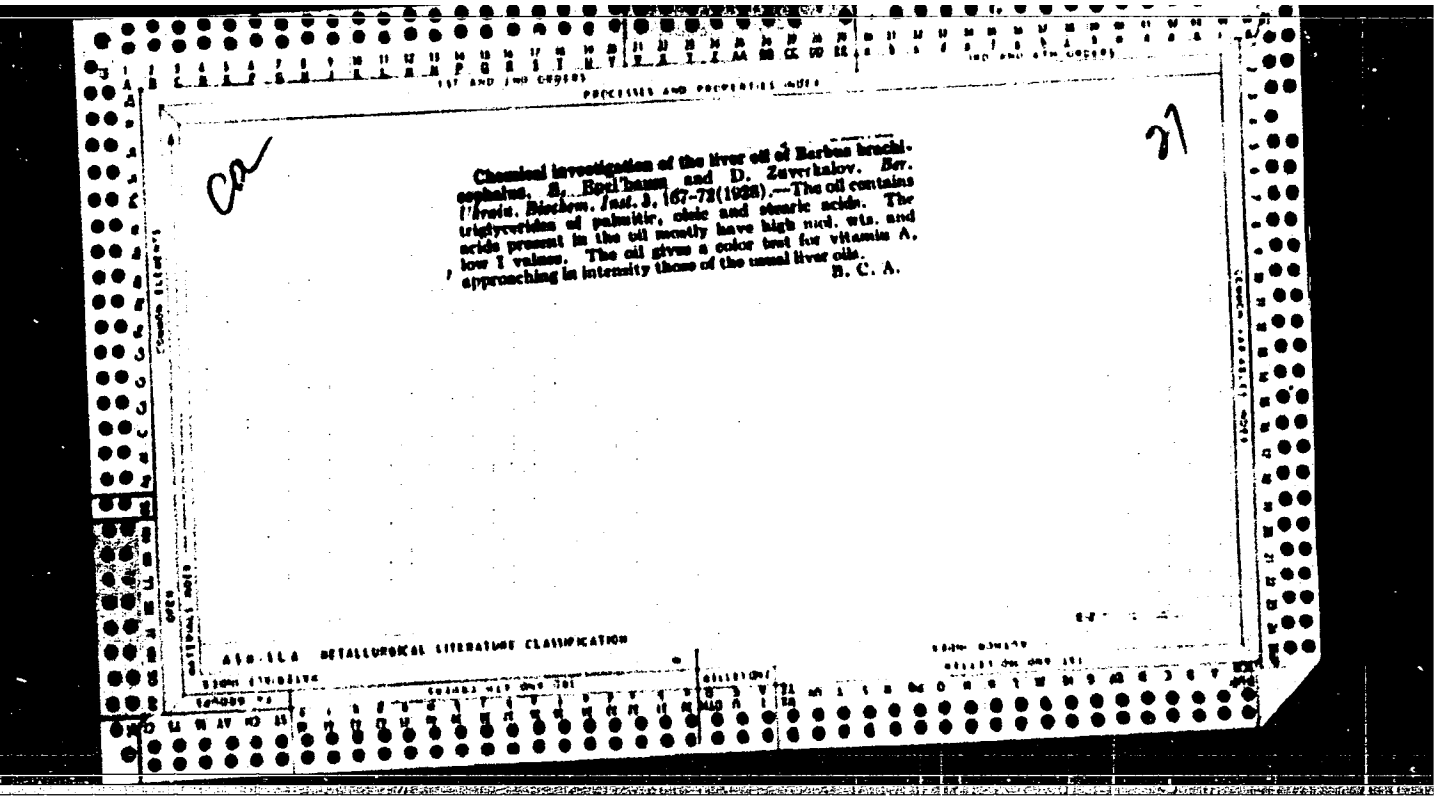
KOLOTYY, S.G.; KOTOMIN, V.A.; EPEL'BAUM, M.L.; NAUMOV, P.A.

Increasing the productivity of cement mills and reducing power consumption during grinding. Prom. energ. 12 no.3:25 Mr '57.
(Cement plants) (MLRA 10:4)

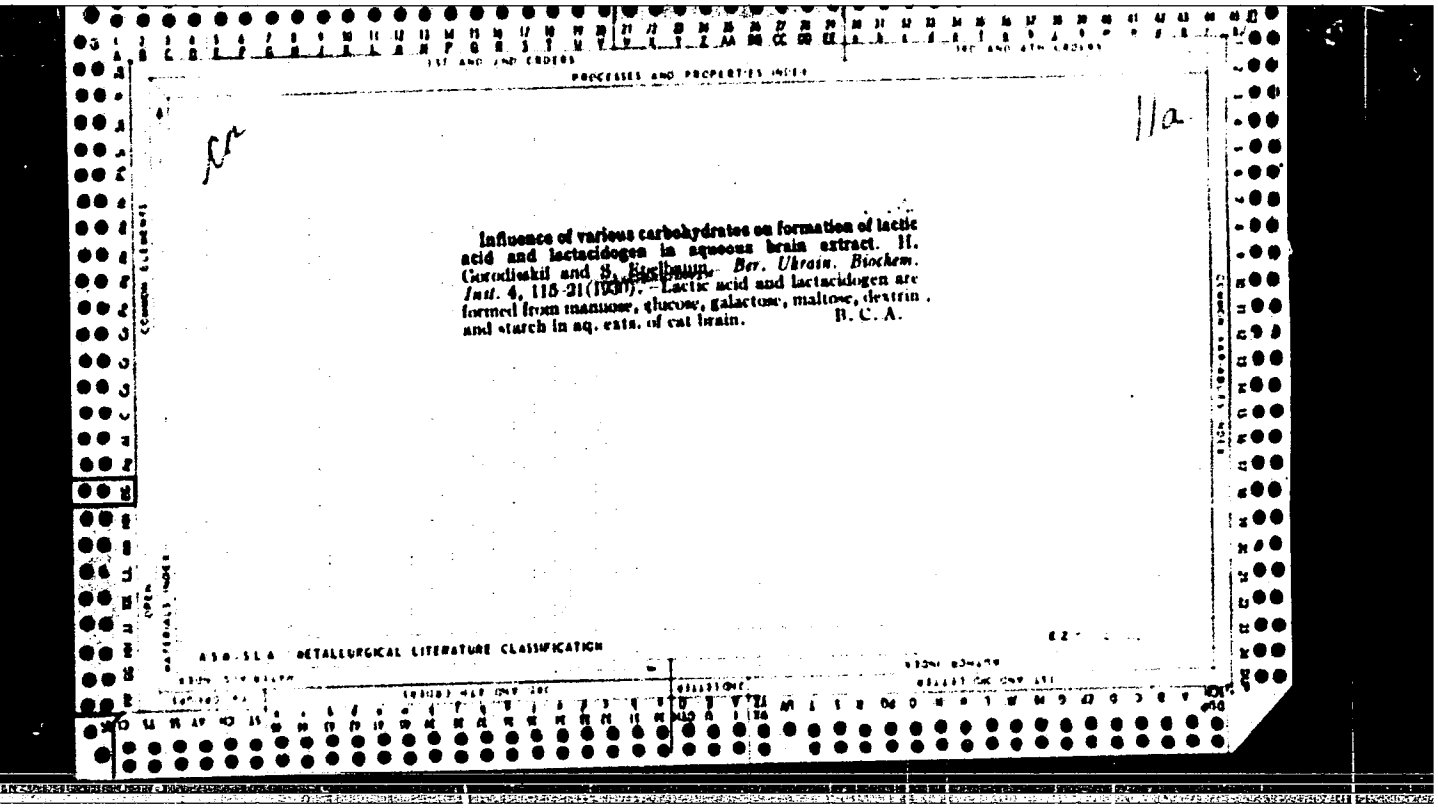
EPFEL'BAUM, R.V.

New types and designs of water heating equipment. Vodopod., vod. resh. i khimkont. na parosil. ust. no.1:62-86 '64. (MIRA 18:2)

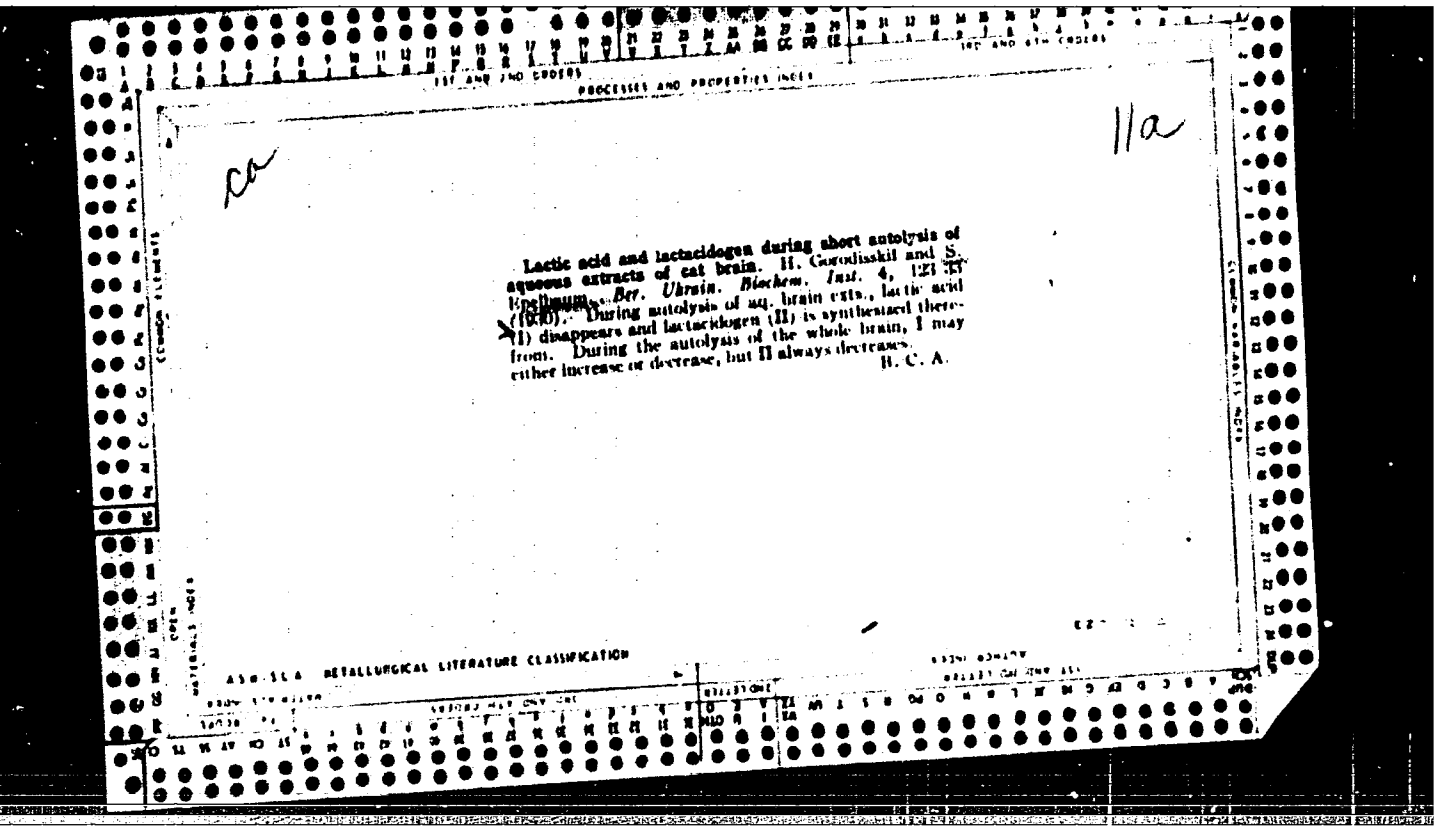
1. Moskovskoye otdeleniye TSentral'nogo nauchno-issledovatel'skogo i proyektno-konstruktorskogo kotloturbinnogo instituta im. Polzunova.



Chemical investigation of the liver oil of Barbus brachicephalus. S. Ruzi'baum and D. Zaverkalov. *Ber. l'krain. Biochem. Inst.* 3, 167-73(1928).—The oil contains triglycerides of palmitic, oleic and stearic acids. The acids present in the oil mostly have high mol. wts. and low I values. The oil gives a color test for vitamin A, approaching in intensity those of the usual liver oils.
B. C. A.



Influence of various carbohydrates on formation of lactic acid and lactacidogen in aqueous brain extract. II. Gorodiskii and S. Rizenbaum. *Ber. Ukrain. Biochem. Inst.* 4, 115-21(1930). — Lactic acid and lactacidogen are formed from mannose, glucose, galactose, maltose, dextrin, and starch in aq. exts. of cat brain. B. C. A.



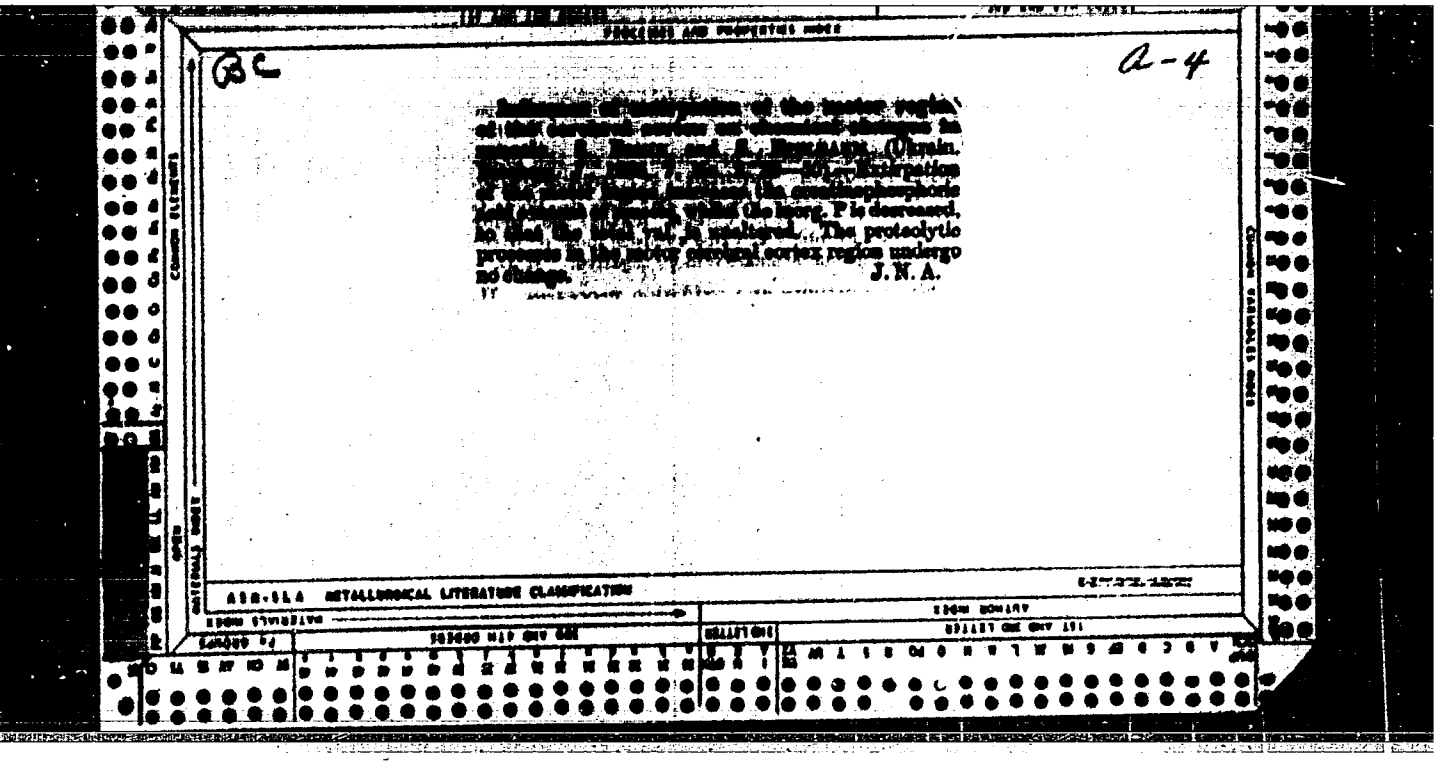
Lactic acid and lactacidogen during short autolysis of aqueous extracts of cat brain. H. Gorodisskii and S. Kpelbaum. *Ber. Ukrain. Biochem. Inst.* 4, 123-35 (1930). During autolysis of aq. brain extn., lactic acid (I) disappears and lactacidogen (II) is synthesized therefrom. During the autolysis of the whole brain, I may either increase or decrease, but II always decreases.
H. C. A.

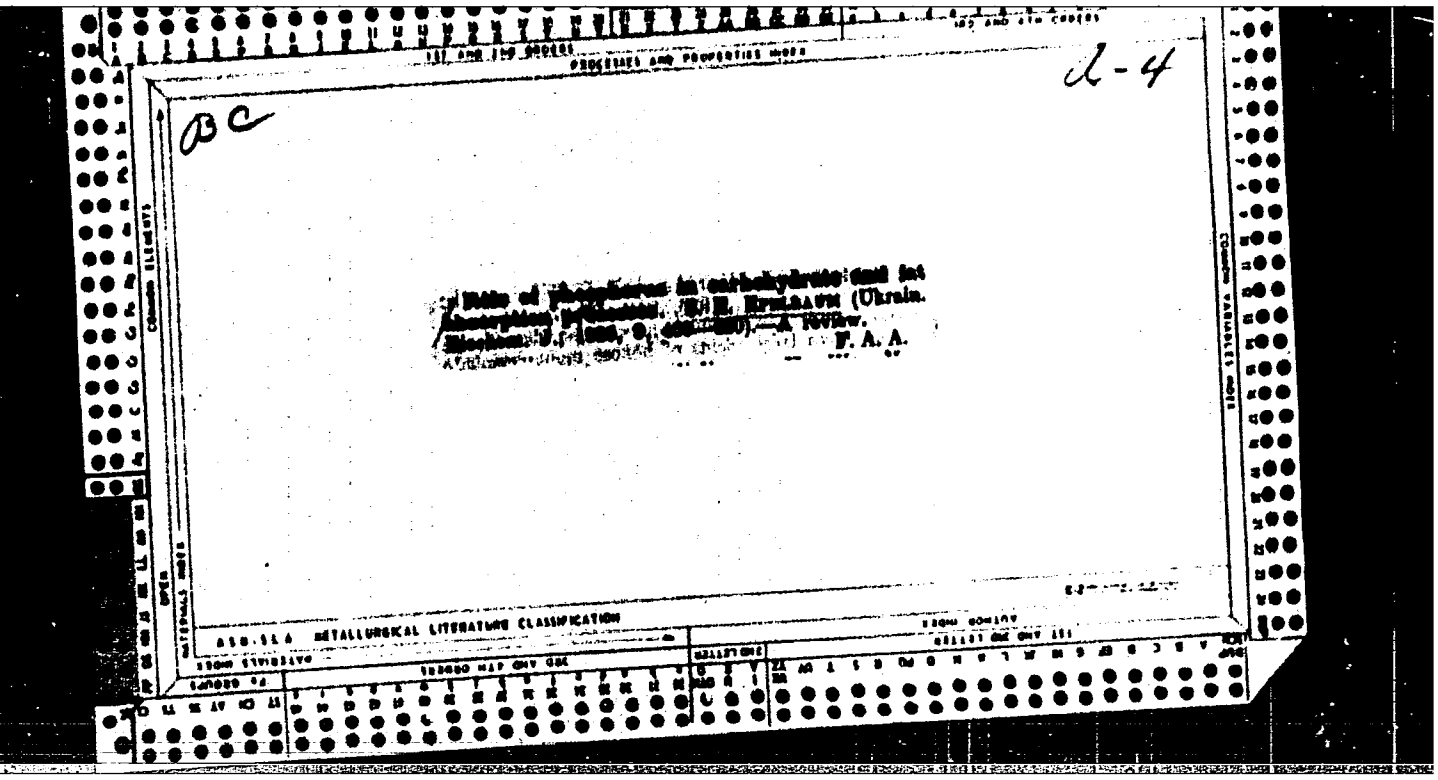
PROCESSES AND PROPERTIES INDEX

Lactacidogen and lactic acid in the surviving pigeon brain. H. Gorodinskaya and S. Rozl'baum. *Ukrain. Biokhem. Zhur.* 8, 87-100(1932); cf. *C. A.* 30, 5341[1]. During 2 hrs. in isotonic NaCl soln. the lactacidogen (I) content of surviving pigeon brain decreases. The addn. of starch or glucose is without effect. Lack of O_2 accelerates and elec. stimulation retards the disappearance of I.

B. C. A.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION





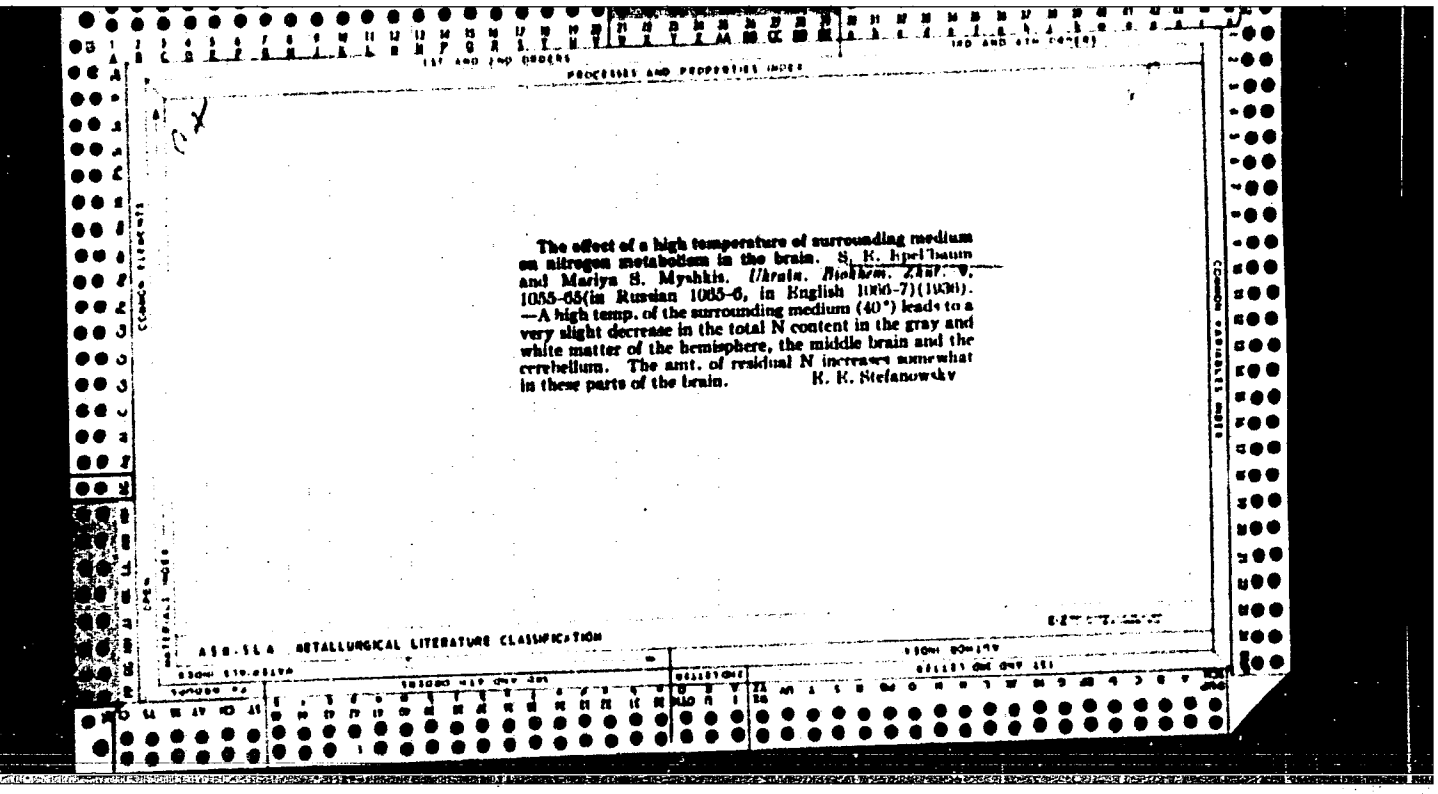
CA

PROCESSES AND PROPERTIES INDEX

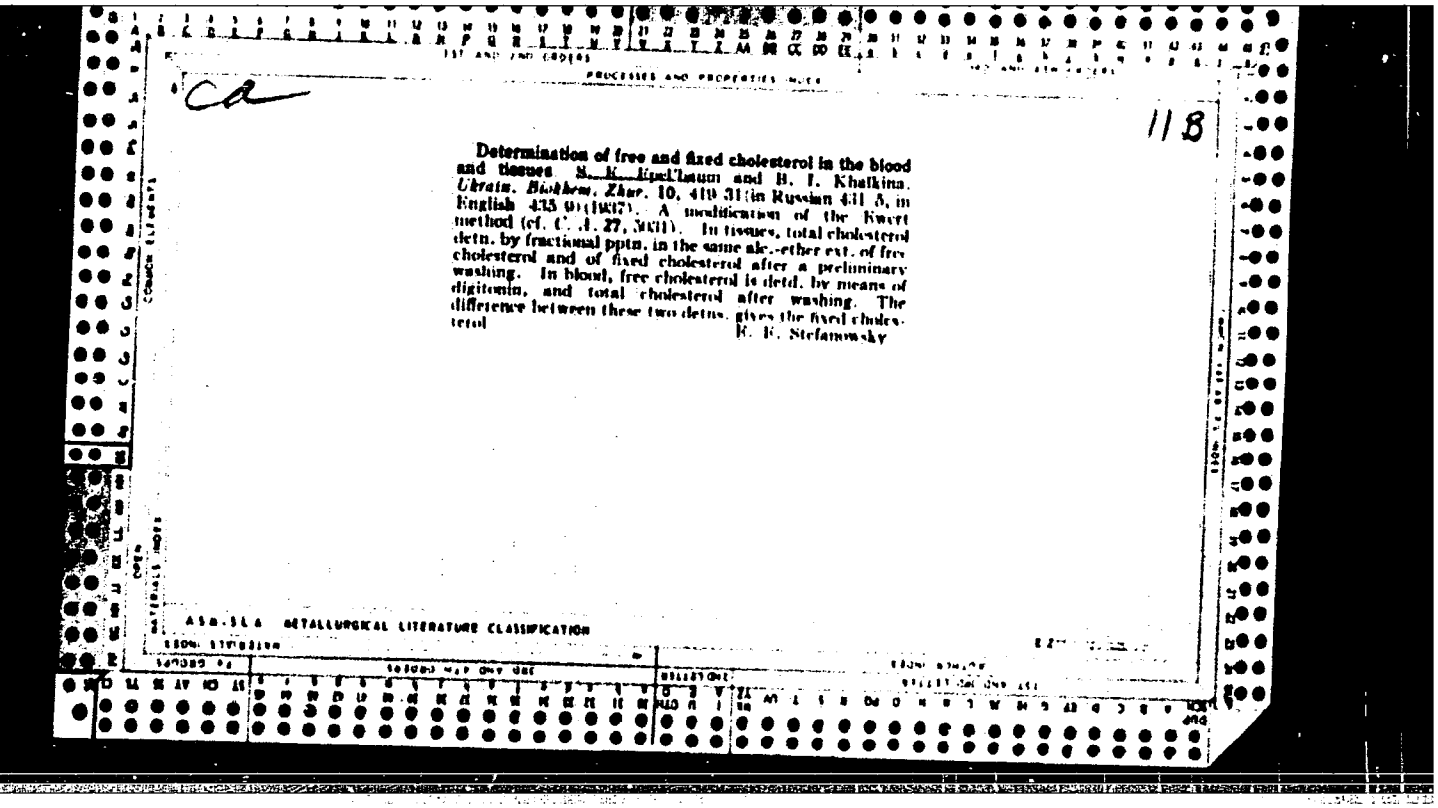
11F

Effect of age on the phosphorus compounds of the brain. S. E. Epel'baum, B. I. Khaikina and K. B. Skvirskaya. *Ukrain. Biokhem. Zhur.* 9, 613-32(in Russian 632-4, in English 634-6)(1936).—In rabbit brain, in the first 7 days after birth there are considerably more total phosphate and acid-sol. P compds. than in adults. With increasing age, there are decreases in the fraction hydrolyzed during 7 min. in *N* HCl at 100°, of the fraction of difficultly hydrolyzable compds. and of creatinephosphoric acid. At 12-23 days the first 2 of these fractions are greater than in adults. After the 30th day after birth, the content of P compds. attains the level characteristic for the brains of adults. E. K. Stefanowsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



The effect of a high temperature of surrounding medium on nitrogen metabolism in the brain. S. R. Ispel'baum and Mariya S. Myshkis. *Ukrain. Biokhim. Zhur.* 7, 1055-65(in Russian 1055-6, in English 1066-7)(1930). —A high temp. of the surrounding medium (40°) leads to a very slight decrease in the total N content in the gray and white matter of the hemisphere, the middle brain and the cerebellum. The amt. of residual N increases somewhat in these parts of the brain. K. K. Stefanowsky



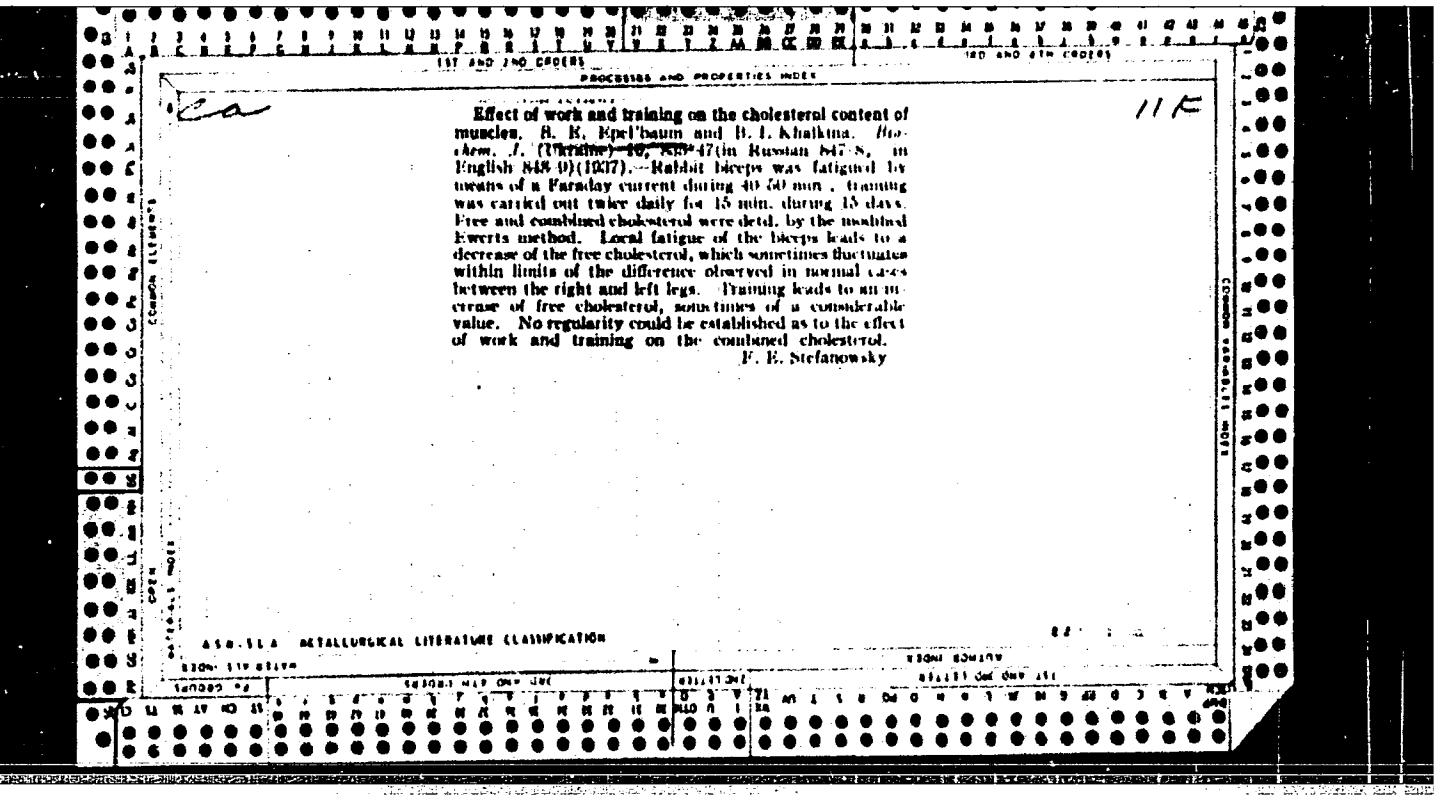
Ca

118

Determination of free and fixed cholesterol in the blood and tissues S. K. Kipel'baum and B. I. Khatkina. *Ukrain. Biokhem. Zhur.* 10, 419-31 (in Russian 431-5, in English 435-9) (1937). A modification of the Kwert method (cf. C. A. 27, 3611). In tissues, total cholesterol detn. by fractional pptn. in the same alc.-ether ext. of free cholesterol and of fixed cholesterol after a preliminary washing. In blood, free cholesterol is detd. by means of digitonin, and total cholesterol after washing. The difference between these two detns. gives the fixed cholesterol

E. E. Stefanowsky

A58-5L4 METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

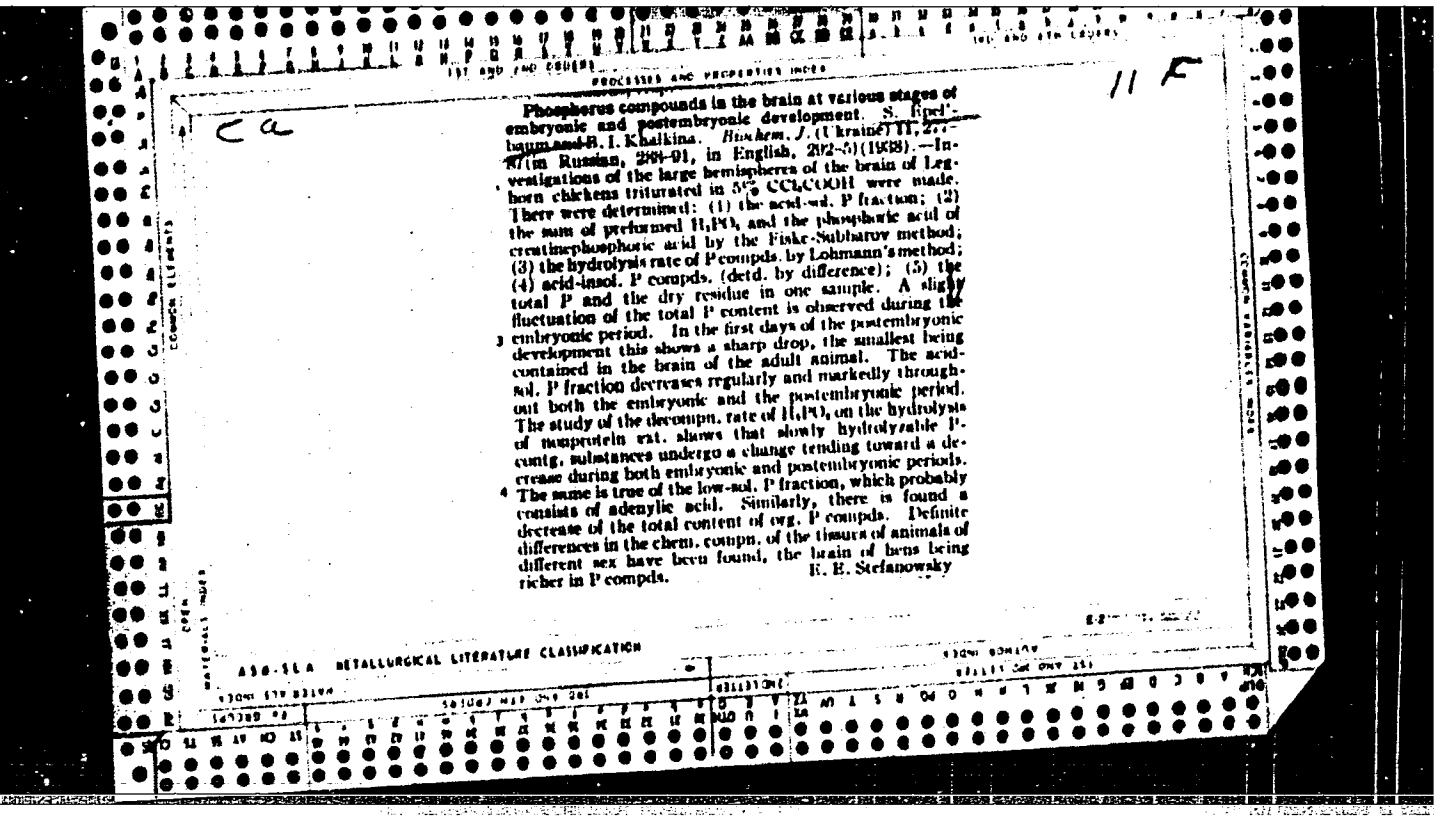
Ca

11 F

Effect of work and training on the cholesterol content of muscles. S. E. Epel'baum and B. I. Khaikina. *Biokhem. Z.* (Ukraine) 10, 35[illegible]47 (in Russian 847-8, in English 848-9)(1937).—Rabbit biceps was fatigued by means of a Faraday current during 40-50 min. Training was carried out twice daily for 15 min. during 15 days. Free and combined cholesterol were detd. by the modified Ewerts method. Local fatigue of the biceps leads to a decrease of the free cholesterol, which sometimes fluctuates within limits of the difference observed in normal cases between the right and left legs. Training leads to an increase of free cholesterol, sometimes of a considerable value. No regularity could be established as to the effect of work and training on the combined cholesterol.

F. E. Stefanowsky

A58-51A METALLURGICAL LITERATURE CLASSIFICATION



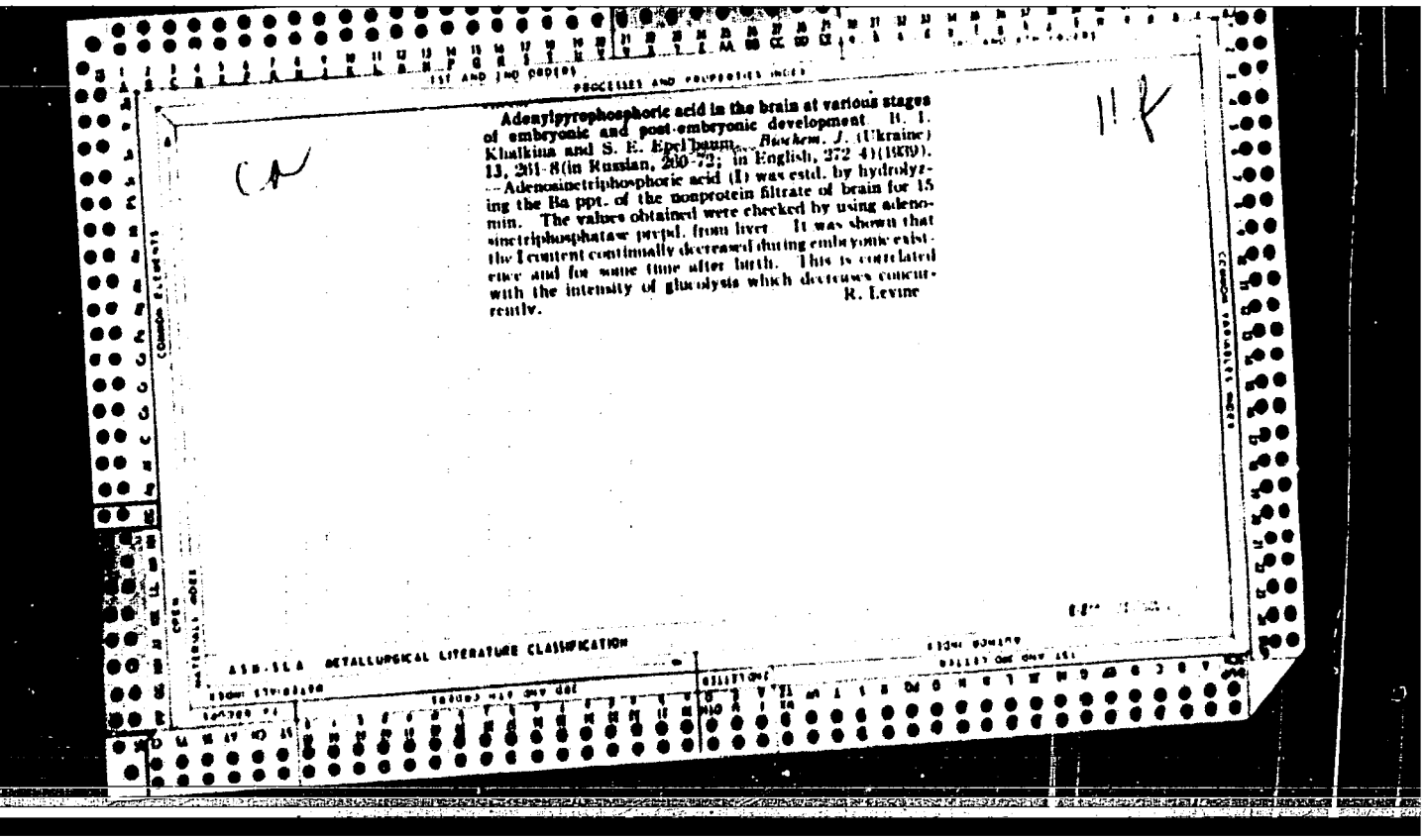
Ca

11 F

Phosphorus compounds in the brain at various stages of embryonic and postembryonic development. S. Epel'baum and B. I. Khalkina. *Biokhem. J.* (Ukraine) 11, 277–87(in Russian, 289–91, in English, 292–5)(1938).—Investigations of the large hemispheres of the brain of Leghorn chickens triturated in 5% CCl_3COOH were made. There were determined: (1) the acid-sol. P fraction; (2) the sum of preformed H,PO, and the phosphoric acid of creatinephosphoric acid by the Fiske-Subbarow method; (3) the hydrolysis rate of P compds. by Lohmann's method; (4) acid-insol. P compds. (detd. by difference); (5) the total P and the dry residue in one sample. A slight fluctuation of the total P content is observed during the embryonic period. In the first days of the postembryonic development this shows a sharp drop, the smallest being contained in the brain of the adult animal. The acid-sol. P fraction decreases regularly and markedly throughout both the embryonic and the postembryonic period. The study of the decompn. rate of H,PO, on the hydrolysis of nucleoprotein ext. shows that slowly hydrolyzable P-contg. substances undergo a change tending toward a decrease during both embryonic and postembryonic periods. The same is true of the low-sol. P fraction, which probably consists of adenylic acid. Similarly, there is found a decrease of the total content of org. P compds. Definite differences in the chem. compn. of the tissues of animals of different sex have been found, the brain of hens being richer in P compds.

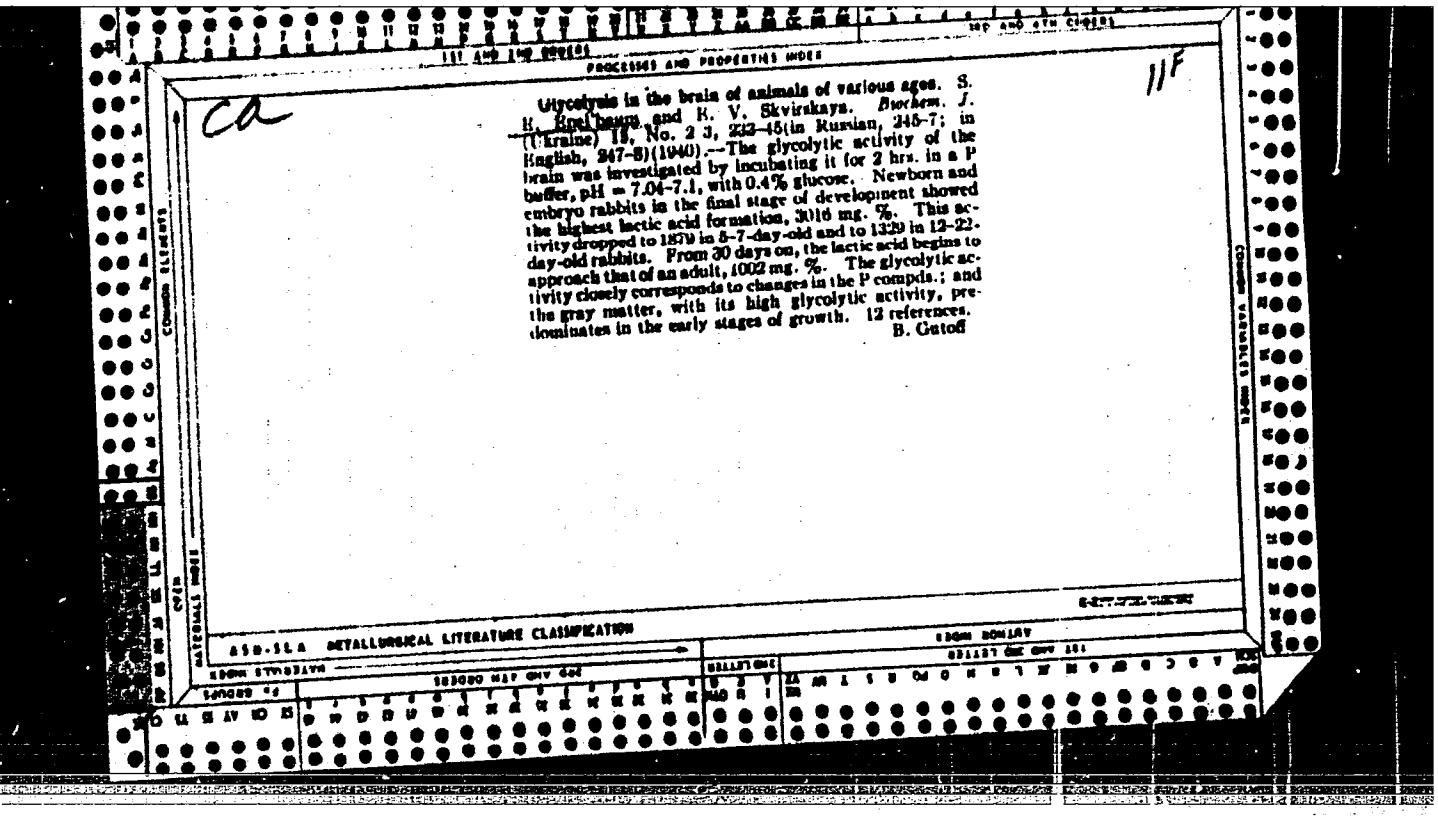
E. E. Stefanowsky

A50-51A METALLURGICAL LITERATURE CLASSIFICATION



Adenylpyrophosphoric acid in the brain at various stages of embryonic and post-embryonic development H. I. Khalkina and S. E. Epel'baum. *Biochem. J.* (Ukraine) 13, 281-8(in Russian, 290-72; in English, 272 4)(1939). —Adenosinetriphosphoric acid (I) was estd. by hydrolyzing the Ba ppt. of the nonprotein filtrate of brain for 15 min. The values obtained were checked by using adenosinetriphosphatase prepn. from liver. It was shown that the I content continually decreased during embryonic existence and for some time after birth. This is correlated with the intensity of glycolysis which decreases concurrently. R. Levine

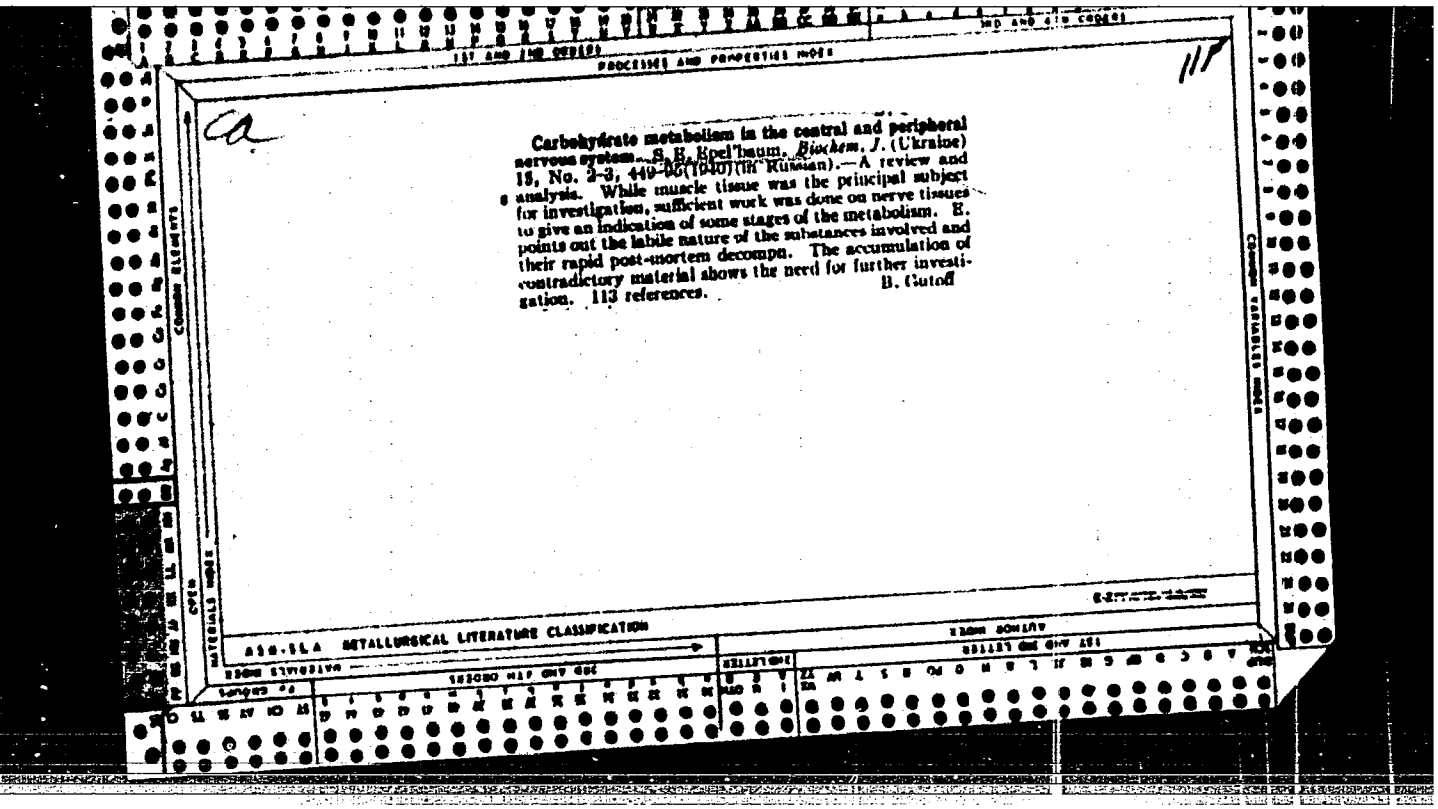
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Ca

Glycolysis in the brain of animals of various ages. S. E. Kipel'baum and K. V. Skvirskaya. *Biochem. J.* (Ukraine) 15, No. 2 3, 233–45(in Russian, 245–7; in English, 247–8)(1940).—The glycolytic activity of the brain was investigated by incubating it for 2 hrs. in a P buffer, pH = 7.04–7.1, with 0.4% glucose. Newborn and embryo rabbits in the final stage of development showed the highest lactic acid formation, 3016 mg. %. This activity dropped to 1879 in 5–7-day-old and to 1329 in 12–22-day-old rabbits. From 30 days on, the lactic acid begins to approach that of an adult, 1002 mg. %. The glycolytic activity closely corresponds to changes in the P compds.; and the gray matter, with its high glycolytic activity, predominates in the early stages of growth. 12 references.
B. Gutoff

11F



Carbohydrate metabolism in the central and peripheral nervous system.—S. B. Kpel'baum, *Biochem. J.* (Ukraine) 15, No. 2-3, 449-[illegible] (in Russian).—A review and analysis. While muscle tissue was the principal subject for investigation, sufficient work was done on nerve tissues to give an indication of some stages of the metabolism. E. points out the labile nature of the substances involved and their rapid post-mortem decompn. The accumulation of contradictory material shows the need for further investigation. 113 references. B. Gutoff

EPEL'BAUM, S. YE. PA 3/50T60

USSR/Medicine - Biotin Nov/Dec 48
Foods

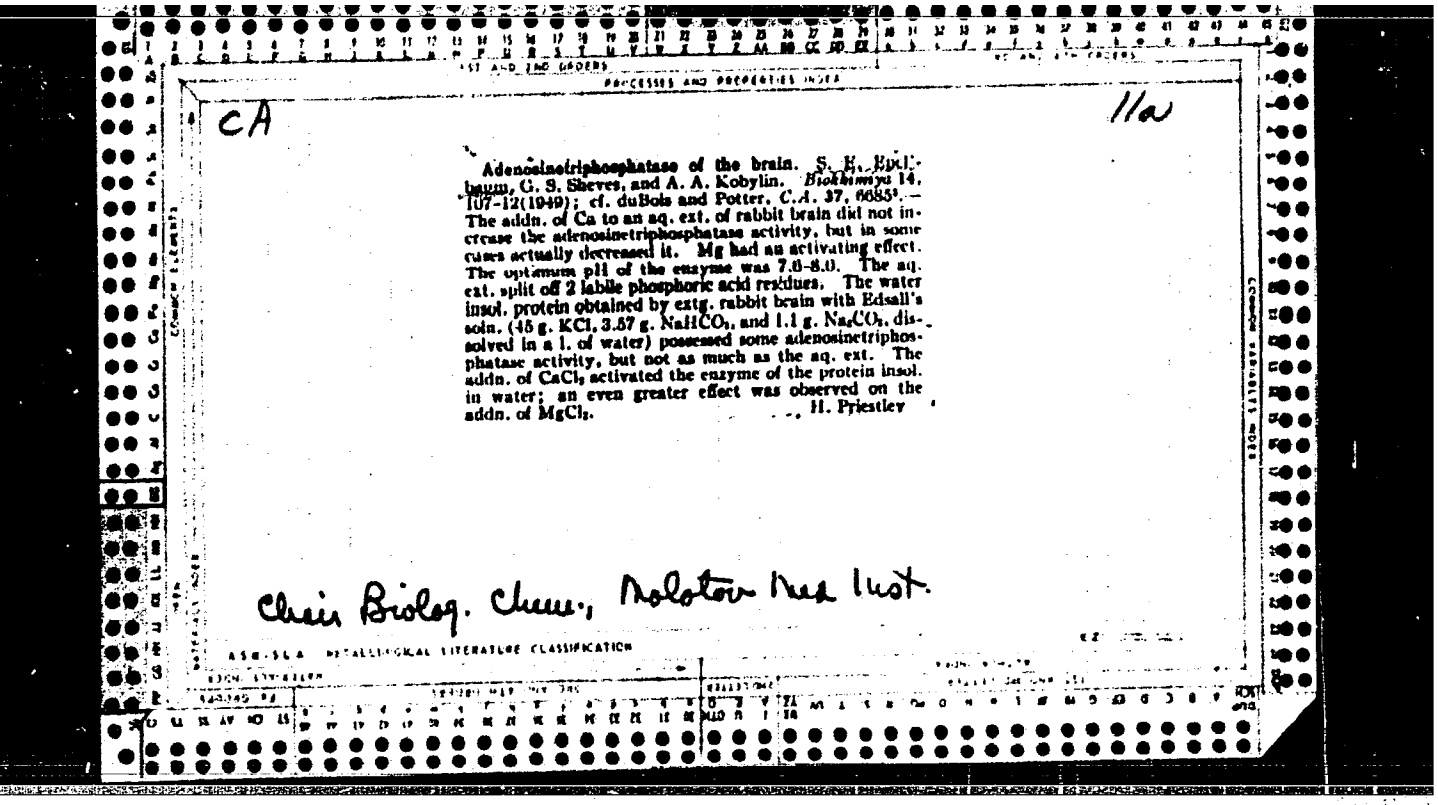
"Biotin, Its Chemical Nature and Biological Role," S. Ye. Epel'baum, Moscow, 17½ pp

"Uspekh Sovrem Biol" Vol XXVI, No 3 (6)

Gives history of biotin. Tables show content, distribution of liver lipins, effect of various admixtures on development of diseases in chickens, and amounts of biotin in various foodstuff. Further research should reveal its biological processes, mechanism of action, and formation.

[redacted] 3/50T60

Chair of Biological Chem., Molotov Med. Inst.



CA

11a

Adenosinetriphosphatase of the brain. S. E. Bal'baum, G. S. Sheves, and A. A. Kobylin. *Biokhimiya* 14, 107-12(1949); cf. duBois and Potter, *C.A.* 37, 6685⁹. — The addn. of Ca to an aq. ext. of rabbit brain did not increase the adenosinetriphosphatase activity, but in some cases actually decreased it. Mg had an activating effect. The optimum pH of the enzyme was 7.6-8.0. The aq. ext. split off 2 labile phosphoric acid residues. The water insol. protein obtained by extg. rabbit brain with Edsall's soln. (45 g. KCl, 3.57 g. $NaHCO_3$, and 1.1 g. Na_2CO_3, dissolved in a l. of water) possessed some adenosinetriphosphatase activity, but not as much as the aq. ext. The addn. of $CaCl_2$ activated the enzyme of the protein insol. in water; an even greater effect was observed on the addn. of $MgCl_2$. H. Priestley

Chem Biolog. Chem., Molotov Med Inst.

APELBAUM, S.E.

USSR.

The effect of denervation on the glycolytic processes of muscles. S. E. Epel'baum and L. F. Kantor. Med. Inst. ... Biokhimiya 19 ... Denervation was accomplished by excising a part of the sciatic nerve ... along the Achilles tendon of the leg of a rabbit. ... of the denervated muscles ... time intervals the rabbits were ... and the muscles removed rapidly from the operated and normal control ... glycolytic and aldolase activities of the muscles were detd. by methods briefly described. Muscle denervation results in the lowering of its glycolytic activity. 31-35 days after operation the muscle loses its power to ... glycogen as well as its ability to convert glucose to lactic acid. ...-25 days following denervation the aldolase activity of the muscle is lowered 24.5-... In ... the aldolase activity of the muscle remains practically unchanged despite its loss in weight.

B. S. Levine

APPROVED FOR RELEASE: Thursday, July 27, 2000 CIA-RDP86-00513R00041212(

Protein metabolism and the processes of oxidation in the denervated muscles of hypothyroid animals. G. S. Smirnov, S. E. Epel'baum, and V. I. Ryumina (Med. Inst., Moscow). *Biokhimiya* 21, 71–7(1956).—The sciatic nerve on one side of rabbits was severed and the nerve on the other side was left intact for a control. A part of these rabbits received for a min. of 30 days 6-methylthiouracil at the rate of 100 mg./kg. body wt. before and after the operation. Following the denervation the rabbits were killed at intervals by decapitation and the gastrocnemius and plantaris muscles were exam'd. The degree of proteolysis was judged by the accumulation of nonprotein N and of the rate of inclusion of labeled methionine. O absorption was det'd. with the aid of the Warburg app. Pyrophosphatase activity (I) was also det'd. Muscle denervation led to a more intensive inclusion of labeled methionine into the protein of the affected muscles; respiration and I activity were enhanced. In denervated muscles of hypothyroid animals muscular atrophy was impeded while the proteolytic activity was somewhat increased. The rate of inclusion of radiolabeled methionine remained unaffected as did the rate of O absorption. The activity of I was increased to a slight degree.

B. S. Levine

CA

2

X-ray investigation of vanadium nitride. I. The process of thermal decomposition of ammonium vanadate and the formation of vanadium nitride. V. Epelbaum and A. Kh. Breger. *Acta Physicochim. U. R. S. S.* 13, 595-9(1940)(in English).—NH_4VO_3 begins to decomp. at 125° in a stream of NH_3. At 200-300° the product is 90% V_2O_4 as detd. by x-ray and chem. analysis; at 300°, 89% V_2O_3, 6% V; at 400°, 61% V_2O_3, 12% VN; at 600°, 45% V_2O_4, 22% V_2O_3, 30% VN; 700°, 55% V_2O_3, 41% VN; 800°, 53% VN, 44% V_2O_3; 900°, 92% VN, 8% VO; and 1100°, 99% VN. The formation of the VN lattice proceeds simultaneously with the reduction of the higher oxides to VO. II. A precise determination of the unit cube edge of vanadium nitride. *Ibid.* 600-3.—The unit cube edge detd. from x-ray photographs is 4.120 ± 0.001 A. as against 4.28 found by Becker and Ebert (cf. *C. A.* 19, 1643), is in good agreement with the value 4.10 calcd. from the at. radii, and lies almost halfway between the values found for VO and VC. Cf. Dawihl and Rix, *Z. anorg. allgem. Chem.* 244, 191(1940); Breger, *C. A.* 34, 3150[?]. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

EPEL'BAUM, V. A. PA 18T80

USSR/Chemistry - Vanadium Compounds Jun 1946
Chemistry - Systems, Binary

"X-Ray Studies of Vanadium Nitride--III: The System VN - VO," V. A. Epel'baum and A. Kh. Breger, 2 pp

"Zhur Fiz Khim" Vol XX, No 6

Discussion, with accompanying graphs and tables, leading to the conclusion that the exposure time of solid solutions in the binary system VN-VO undergoes a linear change from the exposure time of pure vanadium nitride (4,129A) to the exposure time of pure vanadium oxide (-4,08A), with relation to the concentration of the components.

18T80

EPELBAUM, V.

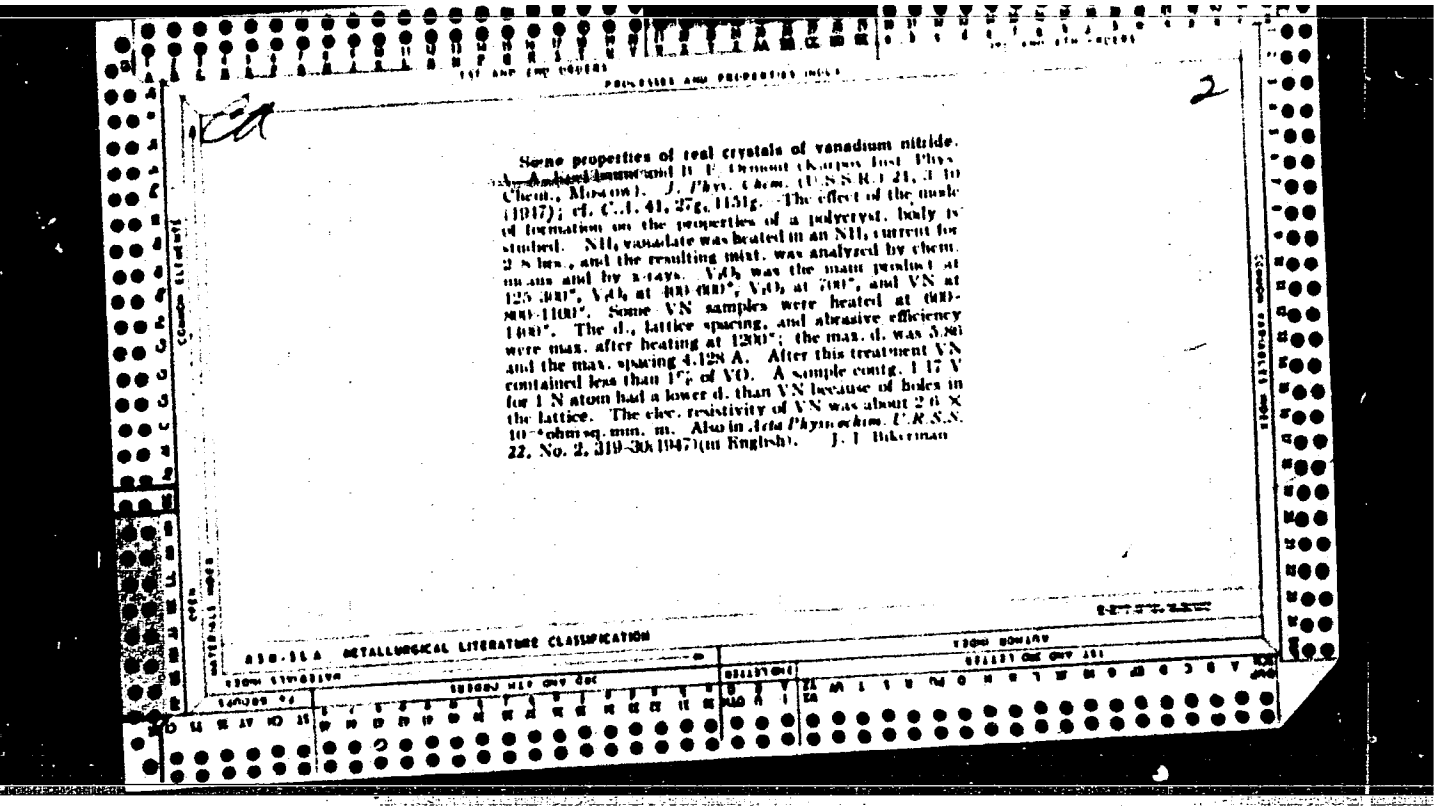
USSR/Chemistry - Vanadium Nitride Jul/Aug 1946
Chemistry - X-Ray Study

"An X-Ray Examination of Vanadium Nitride. III. The System VN--VO," V. Epelbaum, A. Brager, X-Ray Lab and Lab of Solid Compounds, Karpov Inst Phys Chem, Moscow, 3 pp

"Acta Physicochimica URSS" Vol XXI, No 4

Shows unit cube edge of solid solutions VN--VO changes linearly with the concentration of the compounds from the unit cube edge of pure vanadium nitride (4.129 Å) down to that of pure vanadium oxide (~ 4.08 Å). Received 15 Aug 1945.

52T9



Some properties of real crystals of vanadium nitride. [illegible] and P. P. Budnikov (Karpov Inst. Phys. Chem., Moscow). *J. Phys. Chem. (U.S.S.R.)* 21, 3 to (1947); cf. *C.A.* 41, 27g, 1151g. The effect of the mode of formation on the properties of a polycryst. body is studied. NH_4 vanadate was heated in an NH_3 current for 2 hrs., and the resulting mat. was analyzed by chem. means and by x-rays. V_2O_5 was the main product at 125-300°, V_2O_4 at 300-600°, VO_2 at 700°, and VN at 900-1100°. Some VN samples were heated at 600-1400°. The d., lattice spacing, and abrasive efficiency were max. after heating at 1200°; the max. d. was 5.80 and the max. spacing 4.128 A. After this treatment VN contained less than 1% of VO. A sample contg. 1.17 V for 1 N atom had a lower d. than VN because of holes in the lattice. The elec. resistivity of VN was about 2.6 × 10^{-4} ohm sq. mm. m. Also in *Acta Physicochim. U.R.S.S.* 22, No. 2, 319-30 (1947) (in English). J. I. Bikerman

EPELBAUM, V.

PA 9T19

USSR/Crystals - Properties
Crystals - Growth

Feb 1947

"Certain Properties of Real Crystals of Vanadium Nitride," V. Epelbaum, B. Ormont, 12 pp

"Acta Physicochimica" Vol XXII, No 2

Study of the reaction of the formation of real crystals of vanadium nitride and their physico-mechanical properties, in relation to the conditions under which they were formed, to establish the influence of these conditions on crystalline structure and properties.

9T19

EPEL'BAUM, V. A. PA 61T8

USSR/Chemistry - Nitrates - Detection Jan 1948
Chemistry - Analyses - Methods

"An Analysis of Vanadium Nitride," V. A. Epel'baum, B. F. Ormont, Phys Chem Inst imeni L. Ya. Karpov, 1½ pp

"Zavod. Labor" Vol XIV, No 1

Brief description of Dyum's, Kjeldahl's, and alkali method for determining amount of nitrogen in various compounds, particularly in nitrates.

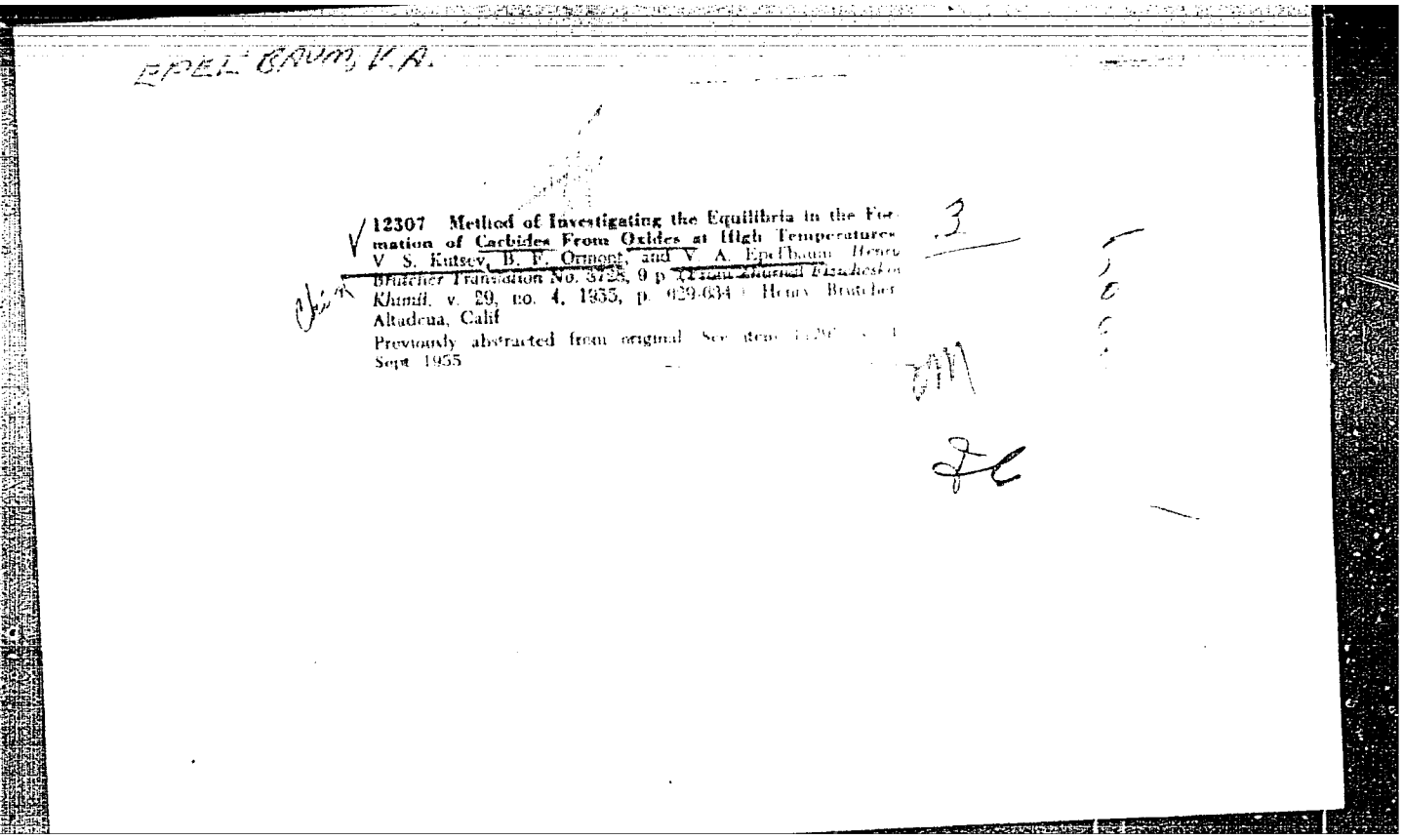
61T8

EPEL'BAUM, V. A.

Distr: 4E2c

The system boron-carbon-silicon and obtaining of "borundum." B. F. Ormont, V. A. Epel'baum, and I. G. Shafran. *Bor, Trudy Konf. Khim. Bora i Ego Soedinenii* 1955, 177–81(Pub. 1958).—Abrasive properties were investigated in 5 products contg. B 12.1–45.8, C 13.3–38.2, and Si 29.8–62.3% and prepd. in a Tamman furnace by a chem. reaction between B_2O_3, SiO_2, and C. The products are described in the following stoichiometric formulas: Si_3B_3C, SiB_3C, Si_4BC_3, $SiBC_3$, SiB_4C_3; as raw materials, boric acid, swaged white silica, and soot were employed. The borundum products had high abrasive properties, and their production cost appeared to be many times lower than that of carborundum, as the consumption of valuable raw materials was greatly reduced. W. Tomaszczyk

4
1



EPEL'BAUM, K.A.

12307 Method of Investigating the Equilibria in the For-
mation of Carbides From Oxides at High Temperatures.
V. S. Kutsev, B. F. Ormont, and V. A. Epel'baum. Henry
Brutcher Translation No. 3725, 9 p. (Translated from
Khimiya, v. 29, no. 4, 1955, p. 629-634.) Henry Brutcher,
Altadena, Calif.
Previously abstracted from original. See item
Sept. 1955

EPEL'BAUM, V.A.

GUREVICH, M.A.; KUTSEV, V.S.; ORMONT, B.F.; SMIRNOVA, V.I.; EPEL'BAUM, V.A.

Variable-composition phases in the chemistry of carbides. (MLRA 9:11)
Zhur.neorg.khim. 1 no.7:1578 Jl '56.

(Carbides)

EPEL'BAUM, V.A.

"Concerning the Formation of the Phase SiB_3 in the System Silicon-Boron," by M. A. Gurevich, V. A. Epel'baum, and B. F. Ormont, Zhurnal Neorganicheskoy Khimii, Vol 2, No 1, Jan 57, pp 206-208

On the basis of the experimental results reported, the authors dispute the conclusion by G. V. Samsonov and V. P. Latysheva (Doklady Akademii Nauk SSSR, Vol 105, 1955, p 499) to the effect that only one boride phase, the composition of which corresponds to the formula B_3Si, is formed in the system silicon-boron. They maintain that the phase SiB_3 also exists.

[Comment: Silicon borides are of importance as semiconductor materials,

[redacted]'YANOV, N.G.; GUREVICH, M.A.; ORMONT, B.F.; ZHDANOV, G.S.

Phases formed in the system chromium -- boron. Part 1: Formation of "β-chromium" under the influence of small additions of boron. Zhur. neorg. khim. 2 no.8:1848-1854 Ag '57. (MIRA 11:3)
(Chromium) (Boron)

5.2400(A)
9.3120

68954
SOV/81-60-2-4306

Translation from: Referativnyy zhurnal. Khimiya, 1960, Nr 2, p 103 (USSR)

AUTHORS: Kudintseva, G.A., Tsarev, B.M., Epel'baum, V.A.

TITLE: The Borides of the Transition Metals and Their Electron-Emission Properties

9.3120
5.2300

68953
SOV/81-60-2-4305

Translation from: Referativnyy zhurnal. Khimiya, 1960, Nr 2, p 103 (USSR)

AUTHORS: Kudintseva, G.A., Epel'baum, V.A., Tsarev, B.M.

TITLE: The Synthesis of Hexaborides of Some Rare Earth Metals and Their Electron-Emission Properties

PERIODICAL: V sb.: Bor. Tr. Konferentsii po khimii bora i yego soyedineniy. Moscow, Goskhimizdat, 1958, pp 112 - 119

ABSTRACT: The hexaborides of La, Ce, Pr, Nd and cerium-mixmetal can be obtained by the combined reduction of a mixture of the oxide of the corresponding rare earth element and boron by carbon by means of thermal treatment under a certain condition (by stages). The emission constants of La and Ce hexaborides coincide well with the literature data; the constants of cerium-mixmetal boride deviate from them, which can be explained by the difference in the composition of the cerium-mixmetal samples. The coefficients of the secondary emission of all hexaborides are less than unity, i.e., these hexaborides can be used for anti-dynatronic coatings, especially the hexaborides of Nd and Pr, which have also a low thermo-ionic emission

Card 1/2

68953
SOV/81-60-2-4305

The Synthesis of Hexaborides of Some Rare Earth Metals and Their Electron-Emission Properties

activity. La hexaboride, due to the high thermo-ionic emission, can be used for the manufacture of cathodes for powerful superhigh-frequency devices. The low coefficient of secondary emission makes it impossible, however, to employ it for magnetronic cathodes. The radiation coefficients of all hexaborides are within the range 0.65 - 0.70. The hexaborides react with the underlaying material, forming Ta boride.

From the authors' summary

4

Card 2/2

60782

S/137/60/000/01/01/009

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No 1, p 91, # 621

15,2226

AUTHORS: Ormont, B.F., Epel'baum, V.A., Shafran, I.G.

TITLE: Investigation of the Boron-Carbon-Silicon System and Preparation of Borundum

PERIODICAL: V sb.: Bor. Tr. Konferentsii po khimii bora i yego soyedineniy, Moscow, Goskhimizdat, 1958, pp 177 - 181

TEXT: To find ways of economizing the valuable B-raw material in the production of abrasive materials on B_4C base, the authors investigated the possibility of obtaining preparations containing B - C - Si, which are generally named "borundum". Preparations were studied which corresponded to the silicon vertex of the ternary structural diagram as well as preparations with a low (2 - 3%) Si content in B carbide. The preparations were produced in Tamman furnaces. B_2O_3 was obtained from boric acid, SiO_2 from ground white quartz and C from carbon black. The preparation corresponding to the Si_2BC_2 formula

Card 1/2

80782

S/137/60/000/01/01/009

Investigation of the Boron-Carbon-Silicon System and Preparation of Borundum

requires for its production an amount of B_2O_3 which is 6 times less than that necessary for B_4C; its efficiency is 80% of that of B_4C. The polishing efficiency of the "borundum"-type preparations exceeds that of carborundum by a factor of 5.

A.P.

Card 2/2

80777
S/137/60/000/03/05/013

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No 3, p 105, # 5312

AUTHORS: Ormont, B.F., Epel'baum, V.A., Shafran, I.G.
15.2220

TITLE: Experience in the Industrial Borundum Production and Testing of Its Properties

PERIODICAL: V sb.: Bor. Tr. Konferentsii po khimii bora i yego soyedineniy, Moscow, Goskhimizdat, 1958, pp 182 - 188

TEXT: For the purpose of raising the abrasive properties of carborundum, the authors carried out experimental smelts with admixture of B in the form of B_2O_3 (up to 8% and more) at temperatures slightly exceeding conventional temperatures. The smelts were prepared under industrial conditions in Acheson furnaces. It is shown that the product obtained - namely borundum - is very well fit for polishing and is 10 times cheaper than B_4C. If small amounts of B are added the pressure of carborundum vapor changes noticeably, whereas the

Card 1/2

80777

S/137/60/000/03/05/013

Experience in the Industrial Borundum Production and Testing of Its Properties

dimensions of the crystal lattice remain unchanged. The physical ground for the raised fitness to polishing of borundum in comparison to carborundum was as yet not found; however, data obtained do not confirm the hypothesis on the penetration of B atoms into the interstices of carborundum lattice.

A.P.

Card 2/2

SOV/78-3-11-19/23

AUTHORS: Epel'baum, V. A., Sevast'yanov, N. G., Gurevich, M. A., Ormont, B. F., Zhdanov, G. S.

TITLE: II. On the Phases Formed in the System Chromium-Boron (II. O fazakh, obrazuyushchikhsya v sisteme khrom-bor)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 11, pp 2545-2552 (USSR)

ABSTRACT: The compounds formed in the system chromium-boron are investigated. The investigations were carried out by means of chemical, radiographic, and metallographic methods in the region of the phase diagram of the system chromium-boron and in the range $CrB_{0,35}$-CrB_3. Purest boron (99,6%) produced by the thermal dissociation of diboranes served as initial components for the production of the chromium-boron phases. The results of the chemical and radiographic analyses of the samples were obtained by heating at 1150°C in vacuum and then at 1300°C in an argon atmosphere for 36 hours. The results are given in table 2. It was found that the γ-phase occurs with a rhombic lattice in the sample with a boron content of $CrB_{0,35}$-$CrB_{0,58}$. In the samples

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with a boron content of $CrB_{0,41}$-$CrB_{0,51}$ only the γ-phase exists. In the samples with a boron content of $CrB_{0,55}$-$CrB_{1,05}$ the δ-phase (Cr_5B_3-phase) is formed. In the samples with a boron content of $CrB_{0,59}$-$CrB_{0,63}$ only the δ-phase is formed. In the samples with a boron content of $CrB_{0,68}$-$CrB_{1,50}$ the ε-phase occurs (CrB with rhombic lattice). In the samples of the composition $CrB_{0,96}$-$CrB_{1,13}$ no other phases were found besides the ε-phase. In the sample with a boron content of $CrB_{1,20}$-$CrB_{1,90}$ a ζ-phase with rhombic lattice is formed. In the sample of the composition $CrB_{1,50}$-$CrB_{1,65}$ no other phases were found to exist besides the ζ-phase. In the samples with $CrB_{1,70}$ and $CrB_{1,90}$ only the η-phase is formed.

There are 2 figures, 5 tables, and 27 references, 1 of which is Soviet.

5(4), 18(7)

AUTHORS: Epel'baum, V. A., Gurevich, M. A. SOV/76-32-10-8/39

TITLE: Investigation of the Phase Diagram of the System Zirconium - Boron (K issledovaniyu fazovoy diagrammy sistemy tsirkoniy-bor) II. On the Formation of the Phase as Dependent Upon the Composition of ZrB_2 (II. Ob obrazovanii fazy, otvechayushchey sostavu ZrB_2)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 10, pp 2274-2281 (USSR)

ABSTRACT: Among the papers published in this field those by the following authors are mentioned and commented on: Tucker and Moody (Tuker, Mudi) (Ref 1), Wedekind (Vedekind) (Ref 2), Andrieux (Endro) (Ref 3), Moiers (Moyyers) (Ref 4), McKenna (Mak-Kenna) (Ref 5), Norton, Blumental and Sindeband (Blyumental', Zindeband) (Ref 6), Kiessling (Kissling) (Refs 7,8), Brewer, Sawzer, Templeton and Dauben (Bryuyer, Sauzer, Templton and Daubin) (Ref 9), Kieffer, Benešovsky and Honak (Kiffer, Benesovski and Khonak) (Ref 10), G. A. Meyerson and G. V. Samsonov (Ref 11), as well as Post and Glaser (Glazer) (Refs 12-14). A zirconium of 99,6% (Zr 99,6%, Fe 0,07%, Ca 17%, Cl 0,001%) and boron

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Investigation of the Phase Diagram of the System Zirconium - Boron. II. On the Formation of the Phase as Dependent Upon the Composition of ZrB_2

(purity 99,3-99,5%) were used in the present experiments. The optimal sintering conditions are at 1900-2100°C and for a duration of 2-3 hours. The syntheses were carried out in a tungsten heater and in an argon atmosphere purified from humidity and oxygen, or in vacuum (10^{-3} mm Hg). The temperature measurements were carried out by means of the optical pyrometer "Ribo". M. I. Starostina and I. A. Pryanishnikova took part in the analyses. The composition of the α-phase is $ZrB_{0,02}$ to $ZrB_{2,68}$. This phase represents a solid solution of boron (up to 2 atom%) in hexagonal α-zirconium with the lattice triodes becoming greater. The ZrB_2 phase also has a hexagonal lattice and is already formed at $ZrB_{0,02-0,03}$. The ZrB_2 phase is present from the composition $ZrB_{1,7}$ to $ZrB_{2,68}$ without any visible impurities of other boride phases of zirconium. The lattice periods of the phase ZrB_2 remain constant within the range of experimental error (Ref 15) ($\pm$ 0,001 kX) and amount to $a = 3,162_5 \pm 0,0003$ kX, $c = 3,522_5 \pm 0,0003$ kX, $c/a = 1,113_8$.

SOV/76-32-10-8/39

Investigation of the Phase Diagram of the System Zirconium - Boron. II. On the Formation of the Phase as Dependent Upon the Composition of ZrB_2

Investigations carried out by an elutriation of $ZrB_{2,68}$ in methylene iodide did not make possible a clear determination of whether this phase had a constant or variable composition. Data are given in tables and radiograms. Finally, the authors thank Professor B. F. Ormont. There are 1 figure, 3 tables, and 16 references, 3 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Moscow, Physical-Chemical Institute imeni L. Ya. Karpov)

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18(6)

SOV/78-4-6-31/44

AUTHORS: Epel'baum, V. A., Gurevich, M. A., Ormont, B. F.

TITLE: On the Nature of the α- and β-phase Which Are Formed in the System Boron-carbon (O prirode α- i β-faz, obrazuyushchikhsya v sisteme bor-uglerod)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6, pp 1398 - 1403 (USSR)

ABSTRACT: The conditions for the formation of the α- and β-phase in the system boron-carbon were investigated. Boron with a purity of 99.6% produced by the thermal dissociation of borane and carbon of a purity of 99.8% were used as initial products. The alloy was produced either in an argon atmosphere or in vacuum 10^{-3} torr at 1900 - 2200°, and in vacuum 10^{-3} torr at 1150°, then stored for 10 hours at this temperature, and then stored 21 hours in an argon atmosphere at 1350°. Then the alloy was again heated and stored for three hours at 2300°. Table 1 shows the results of the chemical- and X-ray phase analyses of several preparations which were produced from purest initial products and purest boron anhydride. The X-ray phase analysis showed that beside the line of the initial

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boron nitride also intensive lines of the α- and β-phase occur in the products. The α-phase is coarse-grained, the β-phase fine-grained. The influence of the thermal treatment of the boron carbide- B_4C - samples on the ratio of the α- and β-phase was investigated as well as the graphite phase (Table 2). The results showed that a change of the ratio in the lines of the α- and β-phase occurs in the case of the thermal treatment in a Tammann furnace after the hot press method and in the furnace TVV-2. A mutual transformation of the α- and β-phase takes place in the temperature range 1900 - 2200°. The lattices of the β-phase were more accurately determined and the average value a= 3.161±0.004 kX was detected. There are 2 tables and 5 references, 3 of which are Soviet.

SUBMITTED: March 27, 1958

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SOV/78-4-8-28/43

5(2)
AUTHORS: Epel'baum, V. A., Gurevich, M. A., Starostina, M. I.

TITLE: On the Solubility of Boron in Silicon (O rastvorimosti bora v kremnii)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1881-1884 (USSR)

ABSTRACT: After a survey on the publication data dealing with this subject (Refs 1-14) the importance of the system mentioned in the title is pointed out since according to the publication data (Refs 5-7) the cermets which are produced from silicon and boron under the action of very high temperatures, are now industrially used. They are characterized by high strength, chemical stability, heat resistance, semiconductor properties, etc. The authors investigated the solubility of boron in silicon and its effect on the structure of the silicon crystal lattice. The composition of the samples was varied between 99Si : 1B and 1Si : 6B. The samples were melted at 1350° or 2100-2200°C in argon atmosphere and analysed by X-ray methods (X-ray camera RKU-86 and RKU-114, copper radiation λCuK_{α_1} = = 1.537396 kX). The lattice period of silicon decreasing with

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On the Solubility of Boron in Silicon

increasing boron content is shown by table 1 and graphically represented by using the data by F. Horn (Ref 14) and H. Nowotny (Ref 15) in figure 1. The behaviour of the solution of boron in silicon corresponds to the solid substitution solution. The strong contraction of the silicon lattice under the influence of relatively small boron amounts could not be explained. There are 1 figure, 1 table, and 17 references, 5 of which are Soviet.

SUBMITTED: April 26, 1958

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EPEL'BAUM, V.A.; SEVAST'YANOV, N.G.; GUREVICH, M.A.; ZHDANOV, G.S.

Phases formed in the system chromium - boron in the region rich in boron. Zhur. strukt. khim. 1 no.1:64-65 My-Je '60. (MIRA 13:8)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Chromium) (Boron)

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E071/E180

AUTHORS: Meyerson, G.A., Dergunova, V.S., Epel'baum, V.A., and Gurevich, M.A. (Moscow)

TITLE: An investigation of some hard alloys of the Boron—Silicon—Carbon system

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo. no. 4, 1961, 90-94

TEXT: The above system has, as yet, been insufficiently studied. For this reason the authors investigated three groups of alloys of the following types: alloys close to the zone of solid solutions based on SiC, alloys based on B_4C, and alloys of the central part of the ternary B-Si-C system. In the latter, the points were chosen so as to overlap the zones in which previous investigators assumed the possibility of the existence of a ternary compound of the type $B_xSi_yC_z$. Specimens of the alloys were obtained by hot pressing powder mixtures of the elements at 2000-2100 °C (no details of the preparation are given). Spectral

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An investigation of some hard alloys....

analysis of the specimens indicated that the sum of admixtures (Fe, Mg, Al, Ca) did not exceed 0.1%. Porosity did not exceed 2-5%, and density was uniform throughout the whole volume of the specimens. A prolonged high temperature annealing (50-100° below pressing temperature) brought the alloys to the equilibrium state with an increase in the grain size, but did not cause any changes in the chemical composition, or any increase in the porosity. The specimens were submitted to metallographic and X-ray analysis and microhardness measurements. The following conclusions are drawn: 1) A phase exists in the B-Si-C system with a melting temperature above 2100 °C and a very high hardness (about 7000 kg/mm^2 and above), noticeably exceeding the microhardness of boron carbide (5000 kg/mm^2). 2) In specimens produced and treated in the described way, metallographic and X-ray analysis did not show the presence of any new phases in noticeable quantities, only solid solutions based on B_4C, SiC and Si (the latter at an insufficient carbon content). The X-ray analysis indicated that the solubility of silicon (or siliconcarbide) is small in boron carbide (less than 2% if calculated on Si), but metallographic investigation suggested

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the presence of an apparently single phase up to 10-12% silicon. This can be explained by the separation of submicroscopically dispersed SiC particles on cooling. The microhardness of such grains, based on B_4C, is 7000 kg/mm^2 and, in some cases reaches 8000 kg/mm^2. 3) Grains of solid solutions based on SiC have a microhardness of 5000-5200 kg/mm^2 instead of the 3500 of pure SiC. 4) The hardness of B-Si-C alloys changed little up to a temperature of 700-800 °C. For alloys based on B_4C, the hardness of 6000-7000 kg/mm^2 at 20° dropped to 3000 kg/mm^2 at 800-900 °C and, for alloys based on SiC, from 4000-5000 kg/mm^2 to 1500 kg/mm^2. During these measurements, the formation of cracks was observed around the indentation in a number of cases, indicating that the actual hardness values could be higher. The work was carried out in the Kafedra redkikh metallov i poroshkovoy metallurgii (Department of Rare Metals and Powder Metallurgy) of the Institut tsvetnykh metallov imeni M.I. Kalinina (Institute of Non-ferrous Metals imeni M.I. Kalinin), in cooperation with the Fiziko-Khimicheskiy institut imeni L.Ya. Karpova (Physico-Chemical Institute imeni L.Ya. Karpov).

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An investigation of some hard alloys ...

There are 1 figure, 1 table and 4 references: 3 Soviet-bloc and 1 English. The English language reference reads as follows:

Ref.1: F. Ton. The quest for hard materials. Industrial and Engineering Chemistry. Industrial edition, 1938, 30, 232-242.

SUBMITTED: November 21, 1960

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S/192/61/002/001/006/006
B107/B218

AUTHORS: Epel'baum, V. A., Sevast'yanov, N. G., Ormont, B. F., and Gurevich, M. A.

TITLE: A possible existence of volume-centered phases of boron carbide and silicon oxycarbide

PERIODICAL: Zhurnal strukturnoy khimii, v. 2, no. 1, 1961, 65

TEXT: It has been stated in Ref. 1 (V. A. Epel'baum, M. A. Gurevich, B. F. Ormont, Zh. neorg. khimii, 1, 2149 (1956)) that lines of a cubic, volume-centered phase occur in preparations of boron carbide, which conclusion was drawn from the reflections of the X-ray picture. This volume-centered phase was called beta phase; it has a period of identity of 3.16 kX. The composition of this phase was not determined. The intensity of the reflections was very high for all samples, for some even higher than that of the reflections of the alpha phase. This led to the assumption that the beta phase belongs to the boron carbon system. The presence of impurities could, however, hardly be excluded, though every attempt was made to remove them (treatment with hydrofluoric and other acids). The authors of Ref. 2 (V. A. Epel'baum, M. A.

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Gurevich, B. F. Ormont, Zh. neorg. khimii, 4, 1938, (1959)) found that lines of this volume-centered phase occur in preparations with strongly differing content of boron and carbon. Thus, it was not possible to establish the position of the phase in the phase diagram of boron-carbon. This fact led to doubts about the composition of the phase, and thus to further experiments (see below). The authors of Ref. 2 had pointed out that spectrum analysis did not show any considerable content of impurities. In 1958, Samsonov had published papers (Ref. 3: G. V. Samsonov, Zh. fiz. khimii, 32, 2424 (1958); Ref. 4: G. V. Samsonov, Ukr. khim. zh., 24, no. 6, 659 (1958)), in which he stated already in 1952/1953 he had detected this phase in boron carbide, together with Zhuravlev, and found it to be silicon oxycarbide. Despite Samsonov's statement, this fact needs a further proof, especially since silicon oxycarbide is of practical, and the detection of Samsonov and Zhuravlev is of theoretical importance. Hitherto, only cubic silicon carbide and silicon oxycarbide have been known, both only with face-centered cell of the sphalerite type. A system of lines in the X-ray picture, however, corresponds to this structure which completely differs from that of the cubic, volume-centered cell. Thus, Samsonov claims to have detected a new phase of silicon oxycarbide with cubic, volume-centered cell and a period of identity

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of 3.16 kX. The authors of the present paper point out that a cubic, volume-centered cell with a period of identity of 3.16 kX leads to certain crystallochemical difficulties, both with boron carbide and silicon oxycarbide. This difficulty lies in the fact that the interatomic distance $d = a\sqrt{3}/2 = 2.85$ kX is larger than the sum of the radii of the individual atoms. In order to explain this fact, it would be necessary to assume the existence of structural centers into which atom impurities enter, or one must assume the existence of complex structural centers with a corresponding system of reflections. The authors therefore arrived at the following conclusion: The system of reflections corresponding to a cubic, volume-centered cell of boron carbide is parasitic; it is formed by the occurrence of an additional phase in the preparation. By their careful experiments and control, the authors found that this admixture is introduced by the tungsten wire which is used for filling the sample to be studied radiographically into the capillary. For the first moment, it was striking that thereby such quantities of impurities could enter into the preparation that their lines are more intense than that of the main mass (Ref. 1). If, however, the great difference of the scattering power of tungsten as compared to boron, silicon, and carbon is considered, then the above effect, which was also observed by

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the authors of Ref. 2, becomes probable. One may assume that the cubic, volume-centered phase of silicon oxycarbide, which was detected by Samsonov and Zhuravlev (Ref. 3) in 1952, has the same origin. [Abstracter's note: This is a full translation from the original.] There are 4 Soviet-bloc references.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: January 21, 1960

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AUTHORS: Serebryanskiy, V. T., and Epel'baum, V. A.

TITLE: Phase diagram for the system aluminum-boron

PERIODICAL: Zhurnal strukturnoy khimii, v. 2, no. 6, 1961, 748-750

TEXT: The authors give the results of the first stage of their study of the phase diagram for the system Al-B and the conditions of the synthesis of aluminum borides at temperatures of up to 1400°C. Of the scientists, who also investigated the borides of aluminum only E. J. Felfen succeeded in obtaining AlB_2 as the main reaction product during the sintering of Al and B; moreover, there is no information in literature regarding the conditions of existence of other aluminum-boride phases. Mixed and compressed Al-B powder was first heated for 30 min. in a vacuum at about 400°C. Purified argon was then admitted, after which the reaction mass was

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Phase diagram for the system ...

heated at higher temperatures. In addition to the X-ray analysis of the pure phases and the determination of their pycnometric density, part of the borides was studied thermographically in an apparatus designed by N. A. Nedumov. The experimental results show that the formation of AlB_2 starts at 650°, and that the most suitable temperature for the process is 800°. AlB_2 begins to decompose at higher temperatures: after prolonged heating at 950° the reaction products consist of AlB_2, Al, and AlB_{12}. The data of the thermal analysis were also confirmed by further tests which disclosed the formation of AlB_2 and α-AlB_{12} a tetragonal modification containing 82·8% B and 16·7% Al, at temperatures of $< 900°$ and $> 1000°$ respectively. The pycnometric density of α-AlB_{12} was found to be 2·62 g./cm^3.

In conclusion the authors state that the conditions of formation of AlB_{12} and AlB_{10} will be determined in a subsequent study.

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